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PHARMACEUTICAL PROGRESS: A SKEPTIC'S ASSESSMENT

Our Disinformation Culture

Coma Patient: Fabricated Communication

Climate Wars Follow-up

Critical Thinking about Computer Security

HISTORICAL WHODUNIT:
POE, SPIRITUALISTS, & MARIE ROGÊT

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From the Editor

Tizzies vs. Investigations

World news media went into a tizzy last November over the sensational case of a longtime coma patient in Belgium, Rom Houben, whose brain scans three years ago showed signs of consciousness. Although all attempts to establish contact with him had failed for two years, with the use of a keyboard and a helper they were suddenly successful. He supposedly could now express his thoughts by typing out keyboard messages with the aid of a "facilitator." To many this seemed a miracle. For skeptics, it raised red flags. For good reason, it now turns out.

In a Special Report in this issue, we present an incisive investigation by members of the Belgian skeptical organization SKEPP, Maarten Boudry, Roeland Termote, and William Betz (the latter a physician, CSI fellow, and SKEPP founder). At the request of the medical institution that cares for Houben, they were present to advise at a long overdue test of this claimed facilitated communication, a highly dubious, previously debunked technique. Most important, they carried out their own investigations. In one they asked the facilitator to leave the room and then showed the patient a large printed word and read it aloud to him. They then asked the facilitator to return and help the patient express the word via the keyboard. The answer was totally wrong. They kept repeating the tests with drawings and by shielding the facilitator's view. They describe their "universally negative" results, thoughtfully discuss the psychology of facilitated communication, and describe their interactions with the patient's neurologist, whom Betz urged to distance himself from these "follies of facilitated communication."

* * *

Our cover article presents an assessment of pharmaceutical progress. Author Reynold Spector, clinical professor of medicine at the Robert Woods Johnson Medical School in New Jersey, has long been involved with the understanding, development, and use of new drugs. His "skeptic's view" straightforwardly acknowledges dubious and regrettable practices of the industry, especially those irritating and frequently misleading direct-to-consumer ads that dominate our TV commercials. But his goal is to gain a balanced view of the good vs. the abuses. He presents criteria for ideal drugs or vaccines and ranks available drugs and vaccines into "ideal or near ideal," "useful but not ideal," and "marginal" categories. This is the third of a series of thoughtful and informed assessments Spector is presenting in our pages. Observant readers will have noticed he previously authored "Science and Pseudoscience in Adult Nutrition Research and Practice" (May/June 2009) and "The War on Cancer: A Progress Report for Skeptics" (January/February 2010). A fourth assessment, of treatments for cardiovascular disease and stroke, is ready for a forthcoming issue.

* * *

WHAM! SI has taken it on the chin from climate change contrarians. They continue to pummel us in this issue (Climate Wars Follow-up). Robert Sheaffer leads the attack. Some readers join in. Three of the scientists who wrote about climate change in a recent issue fire back. And in our news section we report on new developments, including investigations showing that critics' worst allegations about climate scientists were wrong. Attacks on climate science will undoubtedly continue. But as a magazine of science and reason, SI will give most credence not to opinions but data and evidence. That's the best route to the truth.

—KENDRICK FRAZIER

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CSI's Balles Prize Goes to *New Yorker* Staff Writer and Author Michael Specter

The Committee for Skeptical Inquiry (CSI) has awarded its Robert P. Balles Annual Prize in Critical Thinking for 2009 to Michael Specter for his book *Denialism: How Irrational Thinking Hinders Scientific Progress, Harms the Planet, and Threatens Our Lives*, published in October 2009 by The Penguin Press.

Michael Specter has been a staff writer at *The New Yorker* since 1998, where he covers science, technology, and public health issues. His bio shows his bona fides as both a foreign correspondent and a medical/science writer.

Specter came to *The New Yorker* from *The New York Times*, where he had been a roving foreign correspondent based in Rome. From 1995 to 1998, Specter served as the *Times* Moscow bureau chief. He came to the *Times* from *The Washington Post*, where, from 1985 to 1991, he covered local news before becoming the *Post*'s national science reporter and, later, the newspaper's New York bureau chief. In 1996 he won the Overseas Press Club's Citation for Excellence for his reporting from Chechnya. He has twice received the Global Health Council's annual Excellence in Media Award, first for his 2001 article about AIDS, "India's Plague," and second for his 2004 article "The Devastation," about the ethics of testing HIV vaccines in Africa. He also received the 2002 AAAS Science Journalism Award for his article "Rethinking the Brain," about the scientific basis of how we learn.

In *Denialism*, Specter discusses the contradictory beliefs held by large segments of the population concerning science. For while there is no question as to the benefits science has brought to the world in terms of health, life expectancy, food production, wealth, and standards of living, there is a fear of science and scientific progress. Specter points to this fear and efforts to impede science exemplified in such areas as vaccinations,

Michael Specter

genetically engineered foods, synthetic biology, energy, and health care.

Specter argues that this fear has real consequences and will lead to future disasters when scientific progress declines and the world is not capable of feeding its growing population, diseases that could be eradicated infect millions of people, and global warming threatens our very survival as a species.

In a paragraph sure to sound familiar to skeptics, Specter offers some thoughts on how to combat the rising tide of denialism. He writes:

> To accomplish any of this we will have to recognize denialism when we see it. As a society and as individuals, that means asking tough, skeptical questions, then demanding answers supported by compelling evidence. When the government, a company, or any other group makes a claim, we need to scrutinize the claim with care but without passion. Most importantly, we must learn to accept data that has been properly judged and verified—no matter what it says, or how much we might have wished that it pointed in another direction.

The SKEPTICAL INQUIRER highly recommends a presentation Michael Specter gave at the February 2010 TED Conference, available online at www.ted.com/talks/michael_specter_the_danger_of_science_denial.html.

The Robert P. Balles Annual Prize in Critical Thinking is a $1,300 award given to the author of the published work that best exemplifies healthy skepticism, logical analysis, or empirical science. Each year, CSI selects the paper, article, book, or other publication that has the greatest potential to create positive reader awareness of important scientific issues.

CSI established the criteria for the prize, including use of the most parsimonious theory to fit data or to explain apparently preternatural phenomena.

This prize has been established through the generosity of Robert P. Balles, an associate member of CSI, and the Robert P. Balles Endowed Memorial Fund, a permanent endowment fund for the benefit of CSI.

This is the fifth year the Robert P. Balles prize has been presented. Previous winners of this award are:

> 2008: Leonard Mlodinow for his book *The Drunkard's Walk: How Randomness Rules our Lives*, published in 2008 by Pantheon
>
> 2007: Natalie Angier, *New York Times* science writer and author of the book *The Canon: A Whirligig Tour of the Beautiful Basics of Science*
>
> 2006: Ben Goldacre for his weekly column "Bad Science," published in *The Guardian* newspaper (U.K.)
>
> 2005: Shared by Andrew Skolnick, Ray Hyman, and Joe Nickell for their series of articles in the SKEPTICAL INQUIRER on "Testing 'The Girl with X-Ray Eyes'"

Nominations are now being accepted for 2010. Please send submissions to:

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Investigations Exonerate Climate Research Unit of Scientific Misconduct

Is this the beginning of the end—or at least the end of the beginning—of the "Climategate" phase of the great Climate Wars? We'll see, but climate contrarians' widely publicized accusations about a noted British climate research unit's alleged misconduct have now been examined and, largely, rebuked.

Two independent investigations in Britain into critics' charges that climate scientists at East Anglia University's Climatic Research Unit (CRU) mishandled climate data and engaged in scientific misconduct have been completed. They found that while the unit's record-keeping practices could have been better, the most serious accusations against CRU and climatologist Phil Jones, its director, are unfounded.

The unit was at the center of the controversy that first broke out in late November 2009 after more than a thousand e-mails and 3,000 other documents hacked from the university's server were disclosed by climate-science critics, with subsequent accusations of scientific misconduct. CRU maintains one of the three main international climate datasets. (The other two are at the National Oceanic and Atmospheric Administration's National Climatic Data Center in North Carolina and NASA's Goddard Institute of Space Studies in New York.)

On April 12, 2010, an eight-page report of the international panel set up by the university in consultation with the Royal Society to examine the integrity of CRU's research was issued. The seven-member panel was chaired by the eminent British geology professor and Royal Society fellow Ron Oxburgh (Lord Oxburgh) and included scientists from Britain, the U.S., and Switzerland. The panel examined the unit's published peer-reviewed research from the past twenty years and interviewed key staff.

Here is the international panel's number one conclusion: "We saw no evidence of any deliberate scientific malpractice in any of the work of the Climatic Research Unit, and had it been there we believe that it is likely that we would have detected it. Rather we found a small group of dedicated if slightly disorganised researchers who were ill-prepared for being the focus of public attention. As with many small research groups their internal procedures were rather informal."

The panel mildly criticized the CRU for not involving more professional statisticians in its work and for not collaborating more with a much wider scientific group.

It also said CRU "accepts with hindsight" that they should have devoted

Penn State Panel Finds 'No Credible Evidence' for Three Allegations against Michael Mann

The same November day in 2009 that hacked e-mails about climate science from East Anglia University were disclosed, Pennsylvania State University began getting a barrage of e-mails and phone calls (and later letters) about Meteorology Department professor and climate expert Michael E. Mann. The messages accused Mann of manipulating data, destroying records, and colluding to hamper scientific discourse about global warming. Many of the complaint messages were very similar in content, and most were from outside the university, but the university decided the matter should be officially examined. It convened an investigative panel of top university officials. Since there were no formal charges, the panel assembled from the morass of accusatory messages four synthesized allegations to examine.

That panel issued its report February 3, 2010. It cleared Mann of three of the four allegations.

"After careful consideration of the evidence and relevant materials," the inquiry committee reported it found that:

> There exists no credible evidence that Dr. Mann had or has ever engaged in, or participated in, directly or indirectly, any actions with an intent to suppress or to falsify data. . . .
>
> There exists no credible evidence that Dr. Mann had ever engaged in, or participated in, directly or indirectly, any actions with intent to delete, conceal, or otherwise destroy emails, information, and/or data. . . .
>
> There exists no credible evidence that Dr. Mann had ever engaged in, or participated in, directly or indirectly, any misuse of privileged or confidential information available to him in his capacity as an academic scholar.

The fourth allegation, that Mann deviated from accepted research practices, was referred to a committee of faculty scientists, with a report due June 3. See Chris Mooney's *Point of Inquiry* podcast interview with Michael Mann at www.pointofinquiry.org/Michael_mann_unprecedented_attacks_on_climate_research/

NOAA Says March Was Warmest on Record

The National Oceanic and Atmospheric Administration reported on April 15 that the world's combined global land and ocean surface temperature "made last month the warmest March on record."

This is from the monthly NOAA National Climatic Center Analysis, based on new global data and records going back to 1880. "Taken separately, average ocean temperatures were the warmest for any March, and the global land surface was the fourth warmest for any March on record.

more attention in the past to archiving data and algorithms and recording exactly what they did.

Said the panel: "We are satisfied that the CRU tree-ring work has been carried out with integrity, and that allegations of deliberate misrepresentation and unjustified selection of data are not valid."

It reviewed the external criticisms in detail: "It seems that some of these criticisms show a rather selective and uncharitable approach to information made available by CRU. . . . Although we deplore the tone of much of the criticism, we believe that this questioning of the methods and data used in dendrochronological records will ultimately have a beneficial effect and improve working practices."

The panel even had some praise for CRU's work:

> In detailed discussion with the researchers, we found them to be objective and dispassionate in their view of the data and their results, and there was no hint of tailoring results to a particular agenda. Their sole aim was to establish as robust a record of temperatures in recent centuries as possible. All of the published work was accompanied by detailed descriptions of uncertainties and accompanied by appropriate caveats. The same was true in face to face discussions. . . .
>
> We believe that CRU did a public service of great value by carrying out much time-consuming meticulous work on temperature records at a time when it was unfashionable and attracted the interest of a rather small section of the scientific community.

The university issued a statement April 15 saying it "welcomed the report by the Lord Oxburgh's Independent Panel, both in respect of the Climate Research Unit being cleared of any scientific impropriety and dishonesty, and the suggestions made for improvement in some other areas."

Earlier, on March 31, the House of Commons Science and Technology committee published its fifty-eight-page investigation, "The Disclosure of Climate Data from the Climatic Research Unit at the University of East Anglia."

The report notes that critics had asserted on Web sites and in submissions to the committee that the e-mails showed a deliberate and systematic attempt by leading climate scientists to manipulate climate data, arbitrarily adjusting and "cherry-picking" data that supported their global warming claims and deleting adverse data that questioned them.

The Parliament science committee investigation focused on key issues surrounding these claims, including the accuracy and availability of CRU's climate data, datasets, and computer programming, and the question of access or withholding of access.

Here are excerpts from the Parliament committee's report:

> We believe that the focus on CRU and Professor Phil Jones, Director of CRU, in particular, has largely been misplaced. Whilst we are concerned that the disclosed e-mails suggest a

Additionally, the planet has seen the fourth warmest January–March period on record."

255 NAS Members Decry 'Political Assaults' on Climate Science

A strongly worded letter from 255 members of the National Academy of Sciences condemning "political assaults" on climate researchers was published in the May 7 *Science*.

"We are deeply disturbed by the recent escalation of political assaults on scientists in general and on climate scientists in particular," they said in their letter. "We call for an end to McCarthy-like threats of criminal prosecution against our colleagues based on innuendo and guilt by association, the harassment of scientists by politicians seeking distractions to avoid taking action, and the outright lies being spread about them."

An editorial in the same issue also warned that the debate over global warming has become dangerously divided. "The debate has become polarized," warned the editorial, and as a result "the scientific enterprise and the whole of society are in danger of losing their crucial rational relationship."

Geologists' Climate Change Statement

In other news related to the climate controversy, the 22,000-member Geological Society of America issued a revised position statement on climate change in April 2010. Here is its opening paragraph:

> Decades of scientific research have shown that climate can change from both natural and anthropogenic causes. The Geological Society of America (GSA) concurs with assessments by the National Academies of Science (2005), the National Research Council (2006), and the Intergovernmental Panel on Climate Change (IPCC, 2007) that global climate has warmed and that human activities (mainly greenhouse-gas emissions) account for most of the warming since the middle 1900s. If current trends continue, the projected increase in global temperature by the end of the twenty-first century will result in large impacts on humans and other species. Addressing the challenges posed by climate change will require a combination of adaptation to the changes that are likely to occur and global reductions of CO_2 emissions from anthropogenic sources.

The three-page single-spaced statement, a revision of a 2006 statement, goes on to summarize the "strengthened basis for the conclusion that humans are a major factor" and the "large effects" on humans and ecosystems if greenhouse gases reach projected levels. It also offers information for policy decisions for guiding mitigation and adaptation (see www.geosociety.org).

blunt refusal to share scientific data and methodologies with others, we can sympathise with Professor Jones, who must have found it frustrating to handle requests for data that he knew—or perceived—were motivated by a desire simply to undermine his work.

In the context of the sharing of data and methodologies, we consider that Professor Jones's actions were in line with common practice in the climate science community. It is not standard practice in climate science to publish the raw data and the computer code in academic papers. However, climate science is a matter of great importance and the quality of the science should be irreproachable. We therefore consider that climate scientists should take steps to make available all the data that support their work (including raw data) and full methodological workings (including the computer codes). Had both been available, many of the problems at UEA could have been avoided. . . .

In addition, insofar as we have been able to consider accusations of dishonesty—for example, Professor Jones's alleged attempt to "hide the decline"—we consider that there is no case to answer. . . .

Critics of CRU have suggested that Professor Jones's use of the words "hide the decline" is evidence that he was part of a conspiracy to hide evidence that did not fit his view that recent global warming is predominantly caused by human activity. That he has published papers—including a paper in *Nature*—dealing with this aspect of the science clearly refutes this allegation. In our view, it was shorthand for the practice of discarding data known to be erroneous. . . .

Critics of CRU have suggested that Professor Jones's use of the word "trick" is evidence that he was part of a conspiracy to hide evidence. . . . The balance of evidence patently fails to support this view. It appears to be a colloquialism for a "neat" method of handling data. . . .

The evidence that we have seen does not suggest that Professor Jones was trying to subvert the peer review process. Academics should not be criticised for making informal comments on academic papers.

The Parliament committee did fault "the culture at CRU of resisting disclosure of information to climate skeptics." It said the "failure of UEA to grasp fully the potential range of damage to CRU and UEA by the non-disclosure of Freedom of Information requests was regrettable." It urged the unit and the scientific community to take steps "to ensure greater transparency."

"Within our limited inquiry and the evidence we took, the scientific reputation of Professor Jones and CRU remains intact. We have found no reason in this unfortunate episode to challenge the scientific consensus as expressed by Professor [John] Beddington [Government Chief Science Advisor] that 'global warming is happening [and] that it is induced by human activity.'"

Still another independent investigation was carried out by Associated Press (AP) reporters Seth Borenstein, Raphael Satter, and Malcolm Ritter. They and two other reporters examined 1,073 of the e-mails stolen from climate scientists and posted online. AP distributed the results of their "exhaustive" investigation last December 12. They found pettiness, especially in the climate scientists' disdainful attitudes toward critics, but no fraud. "The messages don't support claims that the science of global warming was faked," the AP reported. "The exchanges don't undercut the vast body of evidence showing the world is warming because of man-made greenhouse gas emissions."

"The reason that these UEA scientists were 'exonerated' by four independent investigations so far of scientific misdoings is they didn't actually do any of it—threatened sometimes, but never did it," noted Stanford climatologist Stephen H. Schneider told the SKEPTICAL INQUIRER.

Schneider is a veteran of the climate wars. His new book *Science as a Contact Sport* (National Geographic Society, 2009) chronicles the rough-and-tumble thirty-year fight over climate science up through the summer of 2009, shortly before the hacked e-mails episode began. Schneider told SI:

> What the over-hyped so-called 'Climate Gate' e-mails revealed is that some scientists are also human—especially if under constant attack from those they did not believe to be seriously interested in complex sound science. They get testy, try to keep who they think are not serious away from them, and say some stuff—in private—they (like nearly all of us do with friends in private) would never say in public nor would we act on it from our private frustrated rantings. If those who attacked these half dozen mainstream scientists were truly not mega-hypocrites, they'd voluntarily release all *their* past ten years of back and forth e-mails. I virtually promise you it would be mega more conspiratorial among the critics of UEA than anything between Mann and Jones et al.

Both the independent panel report and the House of Commons science committee report are available in full on the Web.

Together with the earlier exoneration of Pennsylvania State University climatologist Michael E. Mann of similar complaints against him (see sidebar, p. 6), the so-called Climategate hacked e-mail episode now seems to have been resolved—overwhelmingly in favor of the climate scientists. The contrarians' most serious accusations have been subjected to four investigations and found invalid in each case.

—Kendrick Frazier

Kendrick Frazier is editor of the SKEPTICAL INQUIRER. He first began covering climate research in the 1970s as earth sciences editor, and then editor, of Science News.

See Climate Wars Follow-Up, p. 50

Simon Singh Wins Suit as British Chiropractors Cave In

I recently reported on the libel action brought by the British Chiropractic Association (BCA) against writer Simon Singh for disclosing that some of their therapeutic claims were "bogus" (Commentary, "Keep Libel Out of Science," SI, May/June 2010). On April 15, 2010, the BCA announced that they would abandon their legal action.

In the appeal about the meaning of Singh's words, the judges had ruled in favor of Singh. Thus, the BCA had the choice of either giving up or publicly discussing their nonsensical, some would argue dangerous, claims. They have chosen the former, presumably to prevent further damage to the already badly tarnished image of chiropractic worldwide.

Even though he has won this case, Singh is still likely to lose around £20,000. But he is the undisputed hero of two groups of people: the campaigners for free speech who will use this victory as a stepping stone toward their goal of changing English libel law and the skeptics who will use this case as a spark to ignite a much larger fire to threaten the bogus claims of quacks around the world.

—Edzard Ernst

Edzard Ernst, MD, PhD, is at Peninsula Medical School, Universities of Exeter and Plymouth, U.K.

ET (Commission), Go Home

The U.S. government has once again been accused of suppressing proof of the existence of UFOs and aliens, but this time one city is taking the conspiracy theorists too seriously.

A proposal to create an Extraterrestrial Affairs Commission in Denver, Colorado, will go before voters at an election in August this year. Instigated by Jeff Peckman, the "Welcome to Earth" campaign aims to establish a committee to investigate alleged government cover-ups of alien abductions and encounters and to explore extraterrestrial energy sources and cancer-curing technology.

This seems like a spoof of the Search for Extraterrestrial Intelligence (SETI). However, SETI aims to "explore, understand and explain the origin, nature and prevalence of life in the universe," while Peckman's scheme plans to "prove" the existence of spaceships and little green men and to take them to our leader.

The impetus for the proposal was an alien "Peeping Tom" captured on film by a man named Stan Romanek in Nebraska in 2003. He claims he filmed an alien visitor, but he didn't release this incredible footage until 2008. Romanek maintains that NASA cannot explain his film, but the Rocky Mountain Paranormal Research Society (RMPRS) can. Suspecting a hoax, this local skeptical group recreated the film in five hours with a camera and an alien prop.

Romanek and Peckman report that they have received messages from aliens and have captured additional photographs and footage of aliens and UFOs. Furthermore, they claim that there are fifty-seven species of extraterrestrials and that there have been 4,000 landings on Earth.

This is not the first time Peckman has attempted to foist frivolous ballots on the city. In 2003, for example, he attempted to instigate the "Safety Through Peace" ballot initiative. This failed initiative aimed to reduce crime by reducing stress in Denver, forcing residents to "have a nice day" by way of New Age music piped through public transportation and meditation and yoga classes for residents.

This latest proposal received the 4,000 signatures required to appear on the ballot, but an additional 6,000 were invalidated. There are claims that these signatures were falsified, and one wonders if any signatories were of the same mindset as those who jokingly listed "Jedi" as their religion on census forms.

Peckman labels his initiative a "public safety ordinance," and while ludicrous, the petition may appeal to conspiracy theorists or pass by default if skeptical voters are apathetic.

The RMPRS has monitored Peckman's projects for years. Members Bryan Bonner and Matthew Baxter recently formed the Mission for Inhibiting Bureaucracy (MIB), now a registered political committee against Peckman's commission. As official opponents, the MIB command equal media time to challenge Peckman's claims with critical thinking. The group has already exposed some damning facts. Billy Meier, one of Peckman's cohorts, claims that he time-traveled with alien guides and took photographs of what he saw. The MIB's thorough research revealed that this "evidence" comes from a picture book, not another planet. Additional images of "alien women" really did go back in time . . . to a 1960s performance on the TV program *The Dean Martin Variety Show*.

The sobering news is that as a nonpartisan measure on the ballot, Peckman's proposal will cost the city $100,000. If successful, The Denver Extraterrestrial Affairs Commission will cost tens of thousands of dollars every year—not to mention the cost to Denver's reputation.

—Karen Stollznow

Karen Stollznow has a PhD in linguistics and is a host of the Center for Inquiry's Point of Inquiry *podcast.*

Texting While Dead

In view of the massive evidence supposedly compiled over three decades ago for phone calls and radio messages from the dead, it is perplexing (indeed astounding) that there has been little in the way of claimed e-mails or faxes from the dead.

Now that silence has been broken. In the January 2010 issue of *Paranormal Review* (53: 10–12), Robert Callum E. Cooper presents a review of recently received text messages from the dead.

In the first case he presents, a family was besieged by text messages from a presumed poltergeist. The calls were listed as coming from the cell phones of family members, even when the phones in question were dismantled and the batteries and SIM cards removed.

In the second case, soon after his wife's death, a man received calls on his cell phone that were listed as coming from his home phone when no one was there. Then his daughter (who had moved away) received text messages that used words and phrases frequently used by her mother, which both father and daughter interpreted as messages from the dead woman. These text messages did not display an originating number, which is unusual, and based on Cooper's interview with a mobile phone representative, the cell phone would be almost impossible to hack without access to the phone system's major programs.

Interestingly, the deceased wife had been buried with her cell phone (apparently the modern day equivalent of a Viking being buried with his sword). As the text messages were received over a period of five years, Cooper notes that the battery on the wife's cell phone would have died well before many of the text messages were sent (but, one hopes, not before her pacemaker gave out, assuming she revived in her coffin). Unfortunately, Cooper does not provide us with the content of these received messages. One can only presume that they were something along the lines of "WTF?"

—Douglas M. Stokes

Douglas M. Stokes is author of The Conscious Mind and the Material World *and is a frequent contributor to the parapsychological literature.*

House of Commons Reports Homeopathy a Placebo, Urges No Further Funding

The House of Commons Science and Technology Committee has published a landmark Evidence Check report examining the United Kingdom government's policy on homeopathy (www.publications.parliament.uk/pa/cm200910/cmselect/cmsctech/45/45.pdf). The report, published February 22, 2010, was based on sixty submissions of written evidence and several oral hearings. Here I will focus on what the report says about the evidence base of homeopathic products.

Plausibility

The committee expressed considerable doubt about the validity of the "like cures like" principle, one of the fundamental assumptions of homeopathy: "the principle of like-cures-like . . . fails to provide a credible physiological mode of action for homeopathic products." The second assumption of homeopathy, that diluting remedies renders them not weaker but stronger, was considered "scientifically implausible" by the committee. The Members of Parliament (MPs) added: "Even if water could retain a memory of previously dissolved substances, we know of no explanation for why the sugar-based homeopathic pills routinely dispensed would retain such memory."

Clinical Efficacy

The committee considered clinical trials and systematic reviews and meta-analyses of clinical trials to evaluate the efficacy of homeopathic remedies. It concluded that "the systematic reviews and meta-analyses conclusively demonstrate that homeopathic products perform no better than placebos."

This conclusion was in sharp contrast to those of some of the submissions the committee received. But the MPs issued the following statement about these experts: "We regret that advocates of homeopathy, including in their submissions to our inquiry, choose to rely on, and promulgate, selective approaches to the treatment of the evidence base as this risks confusing or misleading the public, the media and policy makers."

Research

The committee considered the frequently voiced notion that more research into homeopathy is required in order to resolve open questions. The MPs strongly opposed this view: "There is enough testing of homeopathy and plenty of evidence showing that it is not efficacious . . . we cannot see how further research on the efficacy of homeopathy is justified. . . . It is also unethical to enter patients into trials to answer questions that have been settled already."

Patient Choice

The committee also addressed questions of placebo response, patient satisfaction, and patient choice vis-à-vis evidence demonstrating that homeopathy can be associated with large placebo effects, which in turn can lead to patient satisfaction and patients wanting homeopathic treatment. The MPs stated: "For patient choice to be real choice, patients must be adequately informed. . . . This would cer-

tainly require an explanation that homeopathy is a placebo. When this is not done, choice is meaningless. When it is done, the effectiveness of the placebo—that is, homeopathy—may be diminished. We argue that the provision of homeopathy on the NHS, in effect, diminishes, not increases, informed patient choice."

Comment

This report considered relevant evidence from both opponents and proponents of homeopathy. It is a careful and thoughtful consideration of all the arguments and counterarguments. In the end, the MPs concluded that homeopathic remedies are placebos and that placebos should not be reimbursed with public funds.

I know of no other official report that is of similar rigor, clarity, and rationality. One can only hope that decision makers in other countries will study it carefully and produce equally well-reasoned reports that eventually translate into evidence-based policy.

—Edzard Ernst

Fraud Watch: Psychic Investing

It is hard to avoid reading about people harmed by pseudoscience, apparently even in the business section of the newspaper. On March 5, 2010, *The New York Times*'s Michael J. de la Merced began an article this way: "He calls himself 'America's Prophet,' a psychic, trained by Nepalese monks in the art of time travel, who can foretell the future of the stock markets. But to the authorities, Sean David Morton is simply a fraud—and a really, really bad psychic."

In the article, headlined "For Psychic, Suit Came as Surprise," de la Merced reported that the fake psychic swindled over $6 million by promising investors "'piles of money,' along with spiritual happiness." Morton apparently claimed to have predicted all the high and low points of the stock market, "giving exact dates for rises and crashes over the last fourteen years."

The case is still pending, but questions arise: Why are people so gullible that they believe such claims? Why did people believe his claims that he learned to use "a fusion of Eastern spirituality and Western psychic techniques" in Nepal? And why was he allowed to make such absurd claims to the public for so many years?

—Jay M. Pasachoff

Jay M. Pasachoff is a professor of astronomy at Williams College, where he teaches a course on "Science and Pseudoscience."

The Death of Our Beloved Colleague Martin Gardner

With this issue already in final page layout, we received the unwelcome news that our longtime friend and colleague Martin Gardner had died May 22. He was ninety-five.

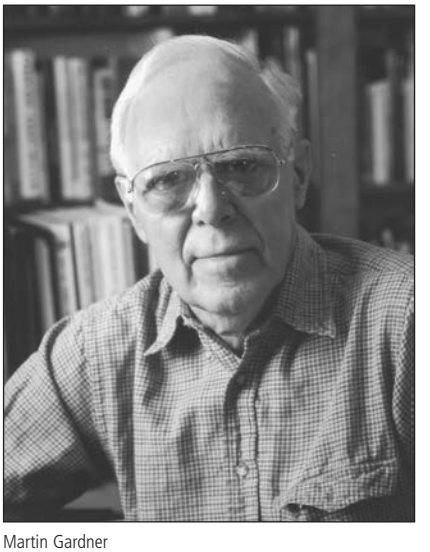
Gardner, a brilliant polymath, was (and always will be) a hero to skeptics and science-minded people worldwide.

"Martin would not have wanted to know how devastated I am at the news," said James Randi, in a perhaps typical expression of grief. "I can't quite picture my world without him. That man was one of my giants, a very longtime friend of some 50 years or more. He was a delight."

Gardner's 1950 book *Fads and Fallacies in the Name of Science* is still the classic examination of pseudoscience and pseudoscientists. It remains in print, still relevant today. In 1976 he became a founding fellow of CSICOP, now the Committee for Skeptical Inquiry, and an original member of SI's Editorial Board. He followed *Fads and Fallacies* with *Science: Good, Bad, and Bogus* and many subsequent compilations of essays and reviews.

He published scores of memorable books in mathematics, philosophy, science, literary criticism, and critiques of fringe science. He was probably most famous for his long-running "Mathematical Games" column in *Scientific American*, where his curious, whimsical, original mind delighted readers everywhere.

After he retired his SA column, we invited him to do a regular column for the SKEPTICAL INQUIRER, and he did so from 1983 to 2002 ("Notes of a Psi-Watcher," later titled "Notes of a Fringe-Watcher"). He also published a series of books based in part on it. He recently resumed his SI column on an irregular basis. Martin mailed his last column to me May 12, only ten days before he died. His cover letter gave no indication of failing health. I answered immediately to tell him how much I enjoyed it. We will publish it in our September /October issue, along with tributes from his colleagues. □



Martin Gardner

—Kendrick Frazier, Editor

Fabricating Communication

The Case of the Belgian Coma Patient

MAARTEN BOUDRY, ROELAND TERMOTE, AND WILLEM BETZ

Recent tests by the Belgian skeptical organization SKEPP have confirmed that the "facilitated communication" (FC) with Rom Houben, a Belgian man who was allegedly trapped in his paralyzed body for twenty-three years, was fictional (see "Miracle Coma Patient's Story Told via Facilitated Communication," SI, May/June 2010). Neurologist Steven Laureys of the University of Liège and his team, who presented Houben's case to the international press in November 2009, seem to have rushed to premature conclusions. Bearing in mind FC's deservedly bad reputation, they should have known better.

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Roeland Termote has a bachelor in medicine degree and is studying philosophy at Ghent Univeristy. Both Termote and Boudry are staff writers for the magazine of the Belgian skeptical society, SKEPP.

Willem Betz, MD, is chairman and founding member of SKEPP and a retired professor of medicine at the Vrije Universiteit Brussel. He is an expert in alternative medicine and the legislative issues surrounding quack medicine.

The Miraculous Case of Rom Houben

In November 2009, the miracle story of Rom Houben, forty-six, made international headlines. In 1983 Houben was involved in a car accident, and his brain was deprived of oxygen for several minutes. Doctors had diagnosed Houben as being in a persistent vegetative state (PVS), a classification used for patients who are wakeful yet suffer from severe brain damage and show no signs of conscious awareness. However, on PET scans of Houben's brain taken three years ago, his treating neurologist Laureys claimed to have found signs of consciousness. Laureys, who has published research in the *New England Journal of Medicine* (*NEJM*) and *BMC Neurology*, is an acclaimed expert in coma and disorders of consciousness. In his latest study published in *NEJM*, Laureys and his colleagues (Monti et al. 2010) have shown that a small percentage of patients diagnosed as being in a persistent vegetative state still show forms of preserved cognition under the scanner.

Ever since the PET scans of Houben's brain, Laureys's team has tried several methods to establish contact with him. At first, according to Laureys, Houben was able to answer simple yes or no questions by pushing buttons with his toes, which were not completely paralyzed. Due to his spastic paralysis, however, the method proved unreliable. Afterwards, still according to Laureys, Houben learned to type on a simple keyboard and was eventually able to fully express his thoughts and type elaborate sentences with the help of a so-called "facilitator." This is a trained assistant who guides the patient's hand along a keyboard, trying to feel and amplify his or her minute willful movements. All over the world video footage showed Houben and his facilitator jointly typing elaborate messages with one of Houben's fingers.

However, the method of FC has long been discredited. Controlled experiments have consistently demonstrated that not the patient but the facilitator is directing the "conversation" (Wheeler et al. 1993; Felce 1994; Twachtman-Cullen 1997). FC has in the past been used to tap into the minds of autistic or mentally retarded children, but this led to false allegations of abuse and other unfortunate complications. In 1994, the American Psychiatric Association issued a statement denying the scientific valid-

ity of FC, stating that "facilitated communication is a controversial and unproved communicative procedure with no scientifically demonstrated support for its efficacy."

Skeptical Reactions

On the basis of FC's dubious reputation, as well as the distributed video footage of Houben, skeptics and scientific authorities all over the world immediately expressed strong doubts about the case. For example, on his blog Neurologica, Yale neurologist Steven Novella noted that "it seems impossible that someone with his level of paralysis, and years of inactivity, would be able to type so quickly with just a little 'support.'" Moreover, Houben was hardly looking in the direction of the keyboard, and on some videos it is clear his eyes were completely closed. Not even a fully conscious person with no neurological damage can blind-type whole sentences with one finger. Experiments have shown that experts in blind-typing can orientate themselves on a keyboard only if they use at least two fingers. That is why keyboards have little nibs on some of the keys to give typists reference points. On the video footage of Houben's FC, however, his hand was in a brace, which leaves him with little or no sensory feedback.

In brief, the spectacular story was completely implausible on its face, even after a cursory examination of the basic facts and the available video footage. Moreover, a straightforward and simple experiment would have sufficed to check this out, as SKEPP and other critics immediately pointed out.

However, Laureys assured the international press that the method was reliable. For example, in *The Times* of London (November 25) Laureys claimed that while initially skeptical, he had convinced himself of FC's reliability by a series of controlled tests: "I showed [Houben] objects when I was alone with him in the room and then, later, with his aide, he was able to give the right answers. . . . It is true." On the same day in *Der Spiegel*, Laureys commented that "naturally, I tested him to rule out the possibility that it's actually the speech therapist doing the writing." A few days later, when skeptics and scientific authorities all over the world had already questioned the case, Laureys backtracked somewhat, distancing himself from FC and telling the press that "further tests were required." By then, however, the news of Houben's miraculous rebirth after twenty-three years had already circulated the globe.

SKEPP

Rom Houben hardly looks at the keyboard as he types with the "help" of his facilitator.

Controlled Tests with SKEPP

At the request of the medical institution where Houben is cared for, on February 4, 2010, a SKEPP delegation (W. Betz and J. Torfs) was present to advise at a long overdue test of FC. We also conducted our own tests. We were surprised to learn from the institute's staff that over a period of two years all attempts to establish any form of communication with the patient by detecting and coding minute movements of the eyes or any other body part had failed.

Houben's habitual facilitator, Linda W., featured in the video footage in November, was not available for the test. Consequently, the director of a Flemish institute for "alternative communication" (Anne C.), who trained several facilitators working with Houben, acted as the facilitator ad interim. Interestingly, Laureys told the media afterwards that when he asked Houben (through Linda W.) whether he was willing to cooperate in a test, (s)he always gave the same reply: "I don't trust you [scientists]." After looking for another facilitator for a year and a half (which raises the question of how Laureys performed tests in November 2009), Laureys and his team finally found Anne C. Through her "facilitation," Houben suddenly changed his mind and agreed to put FC to the test. If there had been any lack of reasons for skepticism, this observation alone would have sufficed to discredit the whole affair.

At the beginning and at the end of our trials, we tried to make normal conversation with Houben, and the FC seemed to work perfectly fine, produc-

ing intelligible and sometimes even elaborate sentences. In one test, we asked the facilitator to leave the room while we showed Houben a large printed word, which we read aloud to him several times. The facilitator was then allowed to return and assist Mr. Houben in giving the word back to us. Although a well-formed word, the resulting answer was completely wrong. We tried the same test with a large and simple drawing, which yielded identical results. In another test, we shielded the keyboard from the facilitator's view in the midst of an answer. Immediately, the typing changed into gibberish and soon halted completely. After the tests by SKEPP, a psychologist and assistant of Laureys gave Houben a set of headphones and asked him to type the words he alone could hear. The results were uniformly negative: the FC method was not tapping the thoughts of the patient at all but only the imagination and expectations of the facilitator.

Facilitators typically express the strong conviction that the patient is the true author of communication in FC.

The Psychology of FC

Facilitators typically express the strong conviction that the patient is the true author of communication in FC. After the failed tests, Linda W. retained faith in the method, arguing that FC often produced information that she was unaware of and that Houben sometimes engaged in philosophical discussions with visiting friends that she could not even understand. It seems unlikely that facilitators like Linda W. are all lying, and there might be more subtle psychological mechanisms at work here.

Psychologists have found that the apparent communication by means of FC is an artifact of "action projection," in which the self-deceived facilitator is attributing his own unconscious movements to the patient. In a study into the psychological aspects of FC, Wegner, Sparrow, and Fuller (2003) subsume this effect under the phenomenon of "uncontrolled intelligence." This refers to the production of intelligent acts in the absence of any conscious intention to do so, or even contrary to one's own intentions. In one experiment, subjects who were instructed to answer a set of questions in an entirely random fashion still tended to give correct answers and afterward denied the influence of their knowledge.

According to Wegner et al., the mere fact that the facilitator's subtle movements coincide with *possible* movements of the patient suffices to significantly reduce the sense of personal authorship. In addition, the physical proximity to the patient further blurs the distinction between self and other. To be sure, facilitators still receive sensory feedback for their own finger movements, yet this is insufficient to compensate for the illusion that the patient is directing the communication. Researchers also found that an increased belief in the effectiveness of FC enhanced the projection of authorship to the communicator. They argue that, for facilitators, belief in FC provides a context for interpreting the effects of "uncontrolled intelligence."

In another experiment, Wegner et al. provided both facilitators and (healthy) communicators with headphones but asked questions only to the facilitators. Despite the fact that the communicators could not hear anything, communication performances still rose above the chance level. Moreover, easy questions were answered correctly more often than difficult questions, which is consistent with the hypothesis of (unconscious) intelligent action.

Facilitators often unconsciously draw from knowledge they have developed about their patients through their intimate relationships with them. Interestingly, many facilitators do admit that they sometimes intervene deliberately in the process of communication (Twachtman-Cullen 1997). Sometimes they start to type the first letters of a word to "get the patient going" or finish a sentence because they "get the gist already." By doing so, facilitators may eventually produce elaborate sentences while still retaining the conviction that none other than the patient is doing the communication.

The Aftermath

When conducting our experiments in February, our intent was not to test Houben but to test FC. As anyone familiar with the reputation of FC expected, the results were completely negative. This is not to deny that Houben may have some limited consciousness. If so, it must have been very frustrating for him to hear all the bogus messages being produced in his name without being able to protest. After our test, SKEPP chairman Willem Betz had a long conversation with Laureys, who insisted that we needed to test more facilitators before jumping to conclusions. We declined and advised Laureys to clearly distance himself from the FC sham. Still, out of respect for the family and to allow the institution time to discuss the results with the dedicated staff, we agreed on a two-week embargo before making our results public. Ten days later, Laureys finally backtracked on the FC part of the story, claiming that

new tests with Houben had failed to validate the method.

Of course, the failed test does not definitely rule out that Houben may be able to communicate somehow with the outside world. Understandably, Houben's mother still believes in FC because she thinks it has produced answers that the facilitator had "no way of knowing." She still hopes to establish a line of communication with her son some day.

Laureys's request for "more tests with more facilitators," at a time when the miraculous story was giving relatives of coma patients all over the world false hope, was clearly off the mark. More tests should have been conducted before launching the story in the international press in the first place. Why did Laureys need more than a year to debunk this spurious method when skeptics had pointed out to him that a controlled test could be performed in a matter of minutes?

Moreover, Laureys repeated to the media that "from the start, I did not prescribe this technique," which is somewhat disingenuous given his earlier statements in *Der Spiegel* and *The Times*. We wonder what world-shaking news there would have been to communicate if it had not been for the spectacular finding about the typing coma patient, validated by his treating neurologist, a renowned expert of consciousness disorders. Moreover, to this day Laureys maintains that FC proved successful with another patient of his, but he refuses to provide the details of the case, claiming that he will present them in due time in a proper scientific outlet. Consequently, he has refused to sign the resolution of the Behavior Analysis Association of Michigan (BAAM) on the scientific evidence against the validity of facilitated communication.

Naturally, this does not affect the fMRI research that Laureys and his colleagues published in *NEJM* (Monti et al. 2010), in which they showed that a small percentage of patients initially classified as being in a PVS show signs of preserved cognition under the scanner. Still, to what extent these traces of meaningful cognitive activity indicate that there is still "someone in there" remains debatable. In interviews Laureys claimed that his scans showed that up to 40 percent of patients previously diagnosed as being in a PVS were trapped in a paralyzed body and could be "released." But this is a premature conclusion. As neurologist Alan Ropper (2010) writes in an editorial for the *NEJM*, "cortical activity does not provide evidence of an internal 'stream of thought.'" The findings of Monti et al. suggest that there is a twilight zone between a vegetative state and a state of minimal consciousness, and we may want to recognize degrees of consciousness.

In any case, even if some of the patients under Laureys's scanner turn out to have a form of consciousness, FC is certainly the last method to recommend for establishing communication. The international news coverage of Houben's case has given the advocates of this sham method an undeserved publicity boost, and the emotional impact on patient's families cannot be underestimated. The decision to present this story before the international media was premature to say the least, and Laureys has clearly overreached in this case. He would do the scientific community and the families of coma patients all over the world a great service if he would finally distance himself completely from the follies of FC. □

SKEPP

When his facilitator's eyes were shielded from the keyboard, Houben began typing gibberish.

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The Real 'Ghost Whisperer'

The character Melinda Gordon in CBS's fantasy TV series *Ghost Whisperer*, played by Jennifer Love Hewitt, is based on a real-life resident of North Royalton, Ohio. Her name is Mary Ann Winkowski, and she sports a silver Cadillac with a license plate reading "SPIRIT" (Kachuba 2007, 202). But can she really talk to ghosts?

Introduction

Winkowski does not claim to communicate with spirits who have "crossed over" to the Other Side, the purview of "mediums"; rather, she says she "can only see and talk to earthbound spirits," claiming, "I talk to the spirits and find out who they are and why they didn't cross over."

Her belief in a dimension where ghosts hang out is nothing new. It is basically a version of purgatory, which in Catholic dogma is a place (or state) "where souls are purged of sin before going to heaven" (Severy 1971, 381). Not surprisingly, Winkowski was raised Catholic. And just as the faithful are urged to assist those in purgatory by prayer and penance (Stravinskas 2003, 626–627), Winkowski believes she and others can guide spirits who lag behind for whatever reason—such as being attached to a thing or place, seeking revenge, fearing judgment (for suicide or other wrongdoing), etc. (Winkowski 2007, 81–104).

She claims to have been freeing earthbound spirits since the age of four, when her Italian grandmother began taking her to neighborhood funerals. She would "see" the dead—who are "always there, right by the casket," she says—then envision "the White Light" and direct spirits to it. Eventually, after becoming a wife and a mother, she was so sought after that she "had to start asking for a little bit of money" and was "basically forced into making it a business" (Winkowski 2000, 11–13, 19–20, 35). In her work, she mixes Catholic and New Age practices—for example, using holy water (water blessed by a priest) to dispel malignant entities and scattering quince seeds around a house "as protection" (2000, 162–167; 2007, 228–234). By means of the power of suggestion, such actions can have a beneficial effect, at the expense of encouraging superstition.

A Question of Evidence

In her books—*As Alive, So Dead* (2000) and *When Ghosts Speak* (2007)—Winkowski provides no acceptable proof of her alleged ability. Some of her evidence is laughable. One published photo, sent by a client, purportedly depicts a spirit energy but is actually the result of the flash rebounding from the camera's wrist strap, a common phenomenon (Nickell 2001, 128–131). Other "spirit" photos showing orbs, mists, and shapes (Winkowski 2007, illus. fol. p. 82) have similar mundane explanations (see Nickell 2008b).

The same is true of other phenomena reported by—or *to*—Winkowski, including the sounds of footsteps and other noises, the effects of drafts and warm spots, and indeed almost anything: Headaches may be "a sign of a curse or negative energy," she says, and insomnia can be a sign of "an earthbound spirit in your home" (Winkowski 2007, 198–210). Missing pieces of a board game, drained batteries, a broken toy—all may be caused by "child ghosts," asserts Winkowski (2007, 208). She experiences a ghostly visitation (Kachuba 2007, 206) that is obviously only a common "waking dream" (one that occurs in the twilight between being fully awake and asleep—see Nickell 1995, 55). She even naively relates versions of the "vanishing hitchhiker" folktale (Winkowski 2000, 189–191).

Contradictorily, she describes ghosts as "pure energy," a life force that survives death (Winkowski 2007, 41), yet she

Joe Nickell, PhD, is CSI's senior research fellow. His many books include Real-Life X-Files, Entities, *and* Adventures in Paranormal Investigation.

maintains that earthbound spirits "smoke, comb their hair, change their clothes—all those things we always do, too. Only I've never been able to figure out where they get the stuff from" (2000, 150). Indeed, the supposed spirit-world existence of *inanimate* objects is revealing: apparitions of people appear fully clothed and are often accompanied by objects, just as they are in dreams, because the clothes and objects are required by the apparitional drama (Tyrrell 1973). That is to say, the source of "the stuff" that puzzles Winkowski is the imagination.

As to her ability to talk with ghosts, Winkowski offers only anecdotal evidence, nothing constituting scientific proof. When Shakespeare's character Glendower asserts, "I can call spirits from the vasty deep," Hotspur counters, "Why, so can I, or so can any man; but will they come when you do call for them?" (*King Henry IV*, I.3.1). In fact, we know that death brings a cessation of brain function and consequently an end to the ability to think, walk, or talk. So why do Winkowski and others believe they can converse with spirits?

Fantasy-proneness

Although Winkowski distinguishes herself from both mediums and psychics (she claims no future-telling ability), she nevertheless shares much in common with them and other paranormal claimants, including alien abductees. Such persons tend to exhibit an array of traits that indicate a fantasy-prone personality. In their pioneering study, psychologists Cheryl Wilson and Theodore Barber (1983) listed several identifying characteristics of people who fantasize profoundly. Called "fantasizers," such individuals fall within the normal range and represent an estimated 4 percent of the population.

For the past several years, I have been applying Wilson and Barber's findings to the biographies and autobiographies of a number of contemporary and historical individuals, ranging from psychics, like Sylvia Browne and Dorothy Allison, to prophets, like Jeane Dixon and Edgar Cayce, as well as others, including many alien abductees, like Whitley Strieber. I have considered the possession of six or more of the identified characteristics to indicate fantasy-proneness. As shown by her own statements, Winkowski—like the others mentioned here—clearly fits the profile of a fantasizer.

Newscom Kathy Hutchins / Hutchins Photo

Mary Ann Winkowski

For example, (1) as a child she had apparent imaginary playmates (Winkowski 2000, 10–14), although she insists they were not imaginary; (2) she claims to receive special messages from paranormal entities (2000; 2007); (3) she is a good hypnotic subject and (4) through past-life regression has had fantasy identities in the form of "several lives" (2000, 28); (5) she has had hypnagogic/hypnopomic experiences, or waking dreams, with (6) classic strange imagery (Kachuba 2007, 206–207) and (7) frequently encounters apparitions (Winkowski 2000; 2007); (8) moreover, while insisting she is "not psychic—at least not in the traditional sense"—she believes she channels energy, creates "White Light" and directs spirits to it, lifts curses, and so on (2000, 92, 176; 2007, 222).

Taken together, the evidence strongly indicates that Mary Ann Winkowski, "The Real Ghost Whisperer," is only participating in elaborate encounters of her own imagination. Like "visionaries" who receive messages from the Virgin Mary or "contactees" or "abductees" who are in touch with space aliens, mediums and ghost whisperers are merely communicating with an adult version of a child's imaginary playmate. Such fantasizers have rich imaginative lives and, often, a receptive audience, since they tap into shared hopes and fears. But they simply deceive first themselves, then others. □

Acknowledgments

I am indebted to the late psychologist Robert A. Baker for past guidance in studying fantasy-proneness. Timothy Binga, director of Center for Inquiry Libraries, assisted with research for this article.

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Testing for X-Ray Vision

At CICAP, the Italian Committee for the Investigation of Claims of the Paranormal, every year we receive a few dozen requests from people claiming to possess some kind of psychic power. Many disappear after we ask for more details. Of those who remain, we almost always find that they are sincere and honest people who really believe they possess the powers they claim. Very rarely does someone try to deceive or cheat us.

Some time ago, we received a letter from a woman, R.G., who claimed she can peer inside sealed boxes with some sort of X-ray vision and describe what is inside with a 60 to 70 percent rate of success. She wanted us to test and verify her powers. In letters and phone calls she explained that we could use any kind of box and any object we liked.

We gladly accepted her proposal and invited her to the University of Pavia, where, with the help of colleagues such as chemist Luigi Garlaschelli and physicist Adalberto Piazzoli, we have often tested psychics.

Once in Pavia, she agreed that the testing situation was ideal, that the people there were not hostile, and that she was confident she would succeed. It is very important to establish this beforehand to prevent excuses if the test fails.

Massimo Polidoro is an investigator of the paranormal, lecturer, and co-founder and head of CICAP, the Italian skeptics group. His Web site is at www.massimopolidoro.com.

She read the protocol for the experiment that we had prepared in advance according to her claims, and she signed it.

No 'Fitting' Allowed

We had previously selected twelve objects, each one different from the others in shape, color, and material. These objects were taken to a different room from the one where the test was taking place and randomly numbered from 1 to 12. An experimenter then chose a random number, picked up the corresponding object, wrapped it in paper in order to avoid any clues from sound (the psychic confirmed beforehand that paper didn't block her visions), put it in a wooden box kept firm by two rubber bands, and finally brought the box within view of R.G. (The experimenter who placed the objects inside the box had to stay away from R.G. in order to avoid any involuntary nonverbal communication.) This procedure took place for each object, and each object was chosen only once.

When R.G. saw the box for the first time, she asked us to remove the rubber bands around it because they could confuse her images. We agreed on the condition that nobody could touch or get close to the box after it was placed on a table.

We then gave R.G. a list of the twelve objects in order to help her decide. She had to concentrate on the box and then indicate on the list the object that best matched her visions. This was done to avoid "fitting" a general description to more than one object; her vision could match one, and only one, object on the list. If she wished, she could switch one guess for another before the end of the test.

The correct answers would be given only at the end of the session. As usual, we videotaped the whole test.

'I See Something Square . . .'

Sitting six feet away from the box with her husband beside her, R.G. concentrated for a few seconds and then described her perceptions: "I see something square . . . a bit thick . . . something dark . . . straight . . ." She then pointed to the rubber stamp on the list.

The test went on until she reached

the last object: "It's something rigid," she said. "Straight but . . . not a cube. It has only one color . . . looks like a pen, a tube . . . could be the key."

At the end of the test, we compared R.G.'s guesses to a list of the objects in the order in which they were presented. Out of twelve objects, she got only one match—exactly what one would expect by chance.

R.G. tried to justify her unsuccessful performance by saying that the conditions (to which she had previously agreed) were not the ones she was accustomed to. She then tried to accommodate her descriptions to the objects actually presented. For example, the object that she had indicated was a key turned out to be a mirror. "Well, I was right after all," she said. "It was something straight, not a cube and only had one color." The lady seemed to have forgotten that she also had said the object looked "like a pen, a tube."

There's No Place Like Home

We had designed our protocol on the basis of what R.G. said she could do (and in conditions under which she said she could succeed). We had tried to accommodate her needs. However, the failure bothered her, and she insisted that this was not the procedure she used at home. Usually, she said, she needed two series of objects: one for the test, the other to be kept in front of her so that she could compare her visions with a replica of the actual object and not with a word on a list. This was the first time she said something of the kind to us.

So, even though the official test was over, we agreed to perform an informal trial. We looked for twelve double objects in the laboratory and proceeded as before. Again, the result was quite clear: one hit in twelve trials.

Still, R.G. was unconvinced and repeated that, at home, she would usually get six or seven objects out of ten and proceeded to indicate two more differences with our test. At home, her husband could use the same object more than once, and this gave her more freedom of choice. Furthermore, she needed some encouragement; she needed to know if she was right or wrong immediately after her guess.

Some of us were against the idea of performing a new test and changing the protocol again. However, after clearly stating on camera that the test was not to be considered a proper, scientific test and that it was done only as another informal trial, in view of future tests, we decided to try.

Since this demonstration proved to be very quick to prepare, we did twenty-eight trials with a choice of the same seven objects for each trial. R.G. was right on six cases. Even this demonstration was not considered significant (in order to have a minimum of significance, $p = 0.02$, with seven objects and twenty-eight trials, nine to ten hits are required).

At the end of our meeting, we suggested that R.G. repeat the test as we had performed it that day at home. This way, we thought, maybe she would realize that once the possibility of adapting one's "visions" to the correct object in the box is ruled out, the results can be only random (unless she really possessed psychic powers, obviously). We said that we would invite her back if, following this procedure, she could still obtain a 60 to 70 percent success rate.

A few years have passed now, but we have never heard from her again. □

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Can Science Answer Moral Questions?

Sam Harris, the acclaimed author of *The End of Faith*, has turned his attention to the issue of morality in a provocative talk entitled "Science Can Answer Moral Questions." That is, as we say in skeptic circles, an extraordinary claim, so I think it is reasonable to demand extraordinary evidence—or at the least a solid argument. Unfortunately, neither was forthcoming throughout the lecture or in follow-up posts that Harris has published to defend his views.

Harris makes the rather startling assertion that "the separation between science and human values is an illusion. . . . Values are a certain kind of fact. They are facts about the well beings of conscious creatures." This is a frontal assault on what in philosophy is known as the naturalistic fallacy, the idea—introduced by David Hume—that one cannot directly derive values (what ought to be) from facts (what is). Harris continues: "If culture changes us, it changes us by changing our brains. And therefore whatever cultural variation there is in the way human beings flourish can at least in principle be understood in the context of a maturing science of the mind," implying that neurobiology—the field in which he is getting a doctoral degree—will soon be the key to moral discourse.

Harris attempts to ground his reasoning in actual examples. Since several states in the U.S. allow corporal punishment of children, he (rhetorically) asks: "Is it a good idea, generally speaking, to subject children to pain, and violence, and public humiliation as a way of encouraging healthy emotional development and good behavior?" Or consider Muslim women who have to cover their bodies completely so as not to offend their alleged god, regarding which Harris comments that "it is the position, generally speaking, of our intellectual community, that we might not like this . . . [but] who are we to say that the proud denizens of an ancient culture are wrong to force their wives and daughters to live in cloth bags?"

The main thrust of Harris's argument seems to be what he sees as a deep analogy between moral and scientific expertise: "Most Western intellectuals . . . say, well, there is nothing for the Dalai Lama to be really right about or for [serial rapist and killer] Ted Bundy to be really wrong about. . . . [One] likes chocolate, [the other] likes vanilla. . . . Notice that we don't do this in science." Harris proceeds to compare differences of opinion between an expert in string theory and himself, claiming that the expert gets the right of way *qua* expert.

I do not like moral relativism any more than Harris does, but he must be living in a semi-parallel universe if he is convinced that "most Western intellectuals" have no problem with burkas, female genital mutilation, beheadings of "blasphemers," and the like. Perhaps a small number of hyper-politically correct and culturally neutral postmodern cuckoos do subscribe to that notion, but it is hardly "the position, generally speaking, of our intellectual community."

I think Harris goes really astray when he talks about moral propositions as a particular kind of empirical fact. First off, even if some moral propositions turn out to be objectively true (for humans and relevantly similar self-aware beings), this is not the same as saying that they are (empirical) facts. There clearly are notions that are objectively true—such as mathematical theorems—but that in no meaningful sense are "facts."

Let us consider again one of Harris's examples: Muslim women forced to wear burkas. I think it is immoral for a society to impose that degree of restriction on individual choices. As a philosopher I believe individual and societal flourishing ought to be balanced in a positive way, not in the negative fashion typical of Muslim societies. But Harris has to justify why he puts individual

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women's wellbeing (defined in a specific way) ahead of societal values or even the wills of the husbands of those women. What if an empirical study were to show that societies with restrictive rules about women's behavior thrive more than their liberal counterparts in the West? Would that make forcing women to wear burkas morally right? I don't think so.

Several examples could be used to make the same point: if we let empirical facts decide what is right and what is wrong, then new scientific findings may very well "demonstrate" that things like slavery, repression of gays and women, and so on are "better" and therefore moral. While I wouldn't have a problem rejecting such findings—just as I don't have a problem condemning social Darwinism and eugenics—Harris would find himself in a bind. Indeed, he seems to make a categorical mistake: what he calls values are instead empirical facts about how to achieve a particular type of human wellbeing; values are the reasons we care about those empirical facts.

Our basic sense of morality is an instinct derived from our biological history, and our moral reasoning is carried out by certain areas of the brain. But neither of these facts makes evolutionary biology or neurobiology the arbiter of moral decision making. We perform moral reasoning with the brain, just like we solve mathematical problems with the brain; is Harris going to suggest that neurobiology will supersede mathematics? Our moral instincts have their roots in our evolution as social primates but so do xenophobia, homophobia, and a bunch of other human characteristics that are not moral and that we don't want to encourage.

So, how do we ground moral reasoning? This is the province of a whole area of inquiry known as metaethics, and I suggest that Harris would benefit from reading about it. Ultimately, ethics is a way of thinking about the human (and other relevantly similar organisms') condition. Rather than taking the scientistic path at the expense of the humanities, a much more productive line of inquiry is to combine the best of what both philosophy and science can offer to help us make our world as just and moral as possible. □

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The Center for Inquiry is pleased to announce its 2010 summer program for children ages seven to sixteen.

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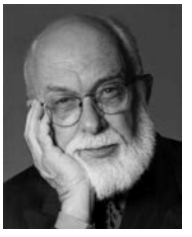

James "The Amazing" Randi is best known as the world's most tireless investigator and demystifier of paranormal and pseudoscientific claims. He has received numerous awards and recognitions, including a fellowship from the MacArthur Foundation in 1986.

Dale McGowan edited and coauthored *Parenting Beyond Belief* and *Raising Freethinkers*, the first comprehensive resources for nonreligious parents. He writes the secular parenting blog "The Meming of Life" and teaches nonreligious parenting seminars across the United States.

For more information, e-mail channy@centerforinquiry.net or visit our Web site at www.campinquiry.org

UFOlogy vs. Truth

James Carrion became the head of MUFON, the largest UFO group in the U.S., in 2006. He has now resigned quite abruptly, as he explains in his blog post "Goodbye Ufology, Hello Truth" (see http://tinyurl.com/Carrion Resigns). His chief complaint: "What I discovered was that the [UFO] phenomenon is based in deception—of the human kind—and that there is no way anyone will understand the real truth unless they are willing to first accept that. No, I am not talking about some grandiose cover-up of alien visitation, but instead the documented manipulation of people and information for purposes that I can only speculate on."

In a recent "Psychic Vibrations" column ("Bigelow's Aerospace and Saucer Emporium," SI, July/August 2009), I wrote about a talk by Carrion I'd attended in 2008: "Clearly more cautious than [former MUFON head Walt] Andrus and not so hostile to skeptical questions, Carrion admitted to a great deal of uncertainty concerning UFOs and would not even make a defense of the Roswell crash claims. His position is essentially the same as that of the late J. Allen Hynek, former scientific advisor for the U.S. Air Force's Project Bluebook: he is sure that UFOs represent something unknown and significant but does not claim to know what."

Robert Sheaffer's "Psychic Vibrations" column has appeared in the SKEPTICAL INQUIRER *for the past thirty years. He is also author of* UFO Sightings: The Evidence *(Prometheus 1998). His Web site is at www.debunker.com.*

In his blog post, Carrion does not hesitate to name names concerning this deception:

> 2006—The report by a bogus Dive Company of finding the 1953 Kinross UFO—perpetrators unknown and still at large. [See www.ufodigest.com/news/0806/kinross.html.]
>
> 2007—Michael Nelson's bogus claims of recovering physical evidence related to the 1966 Portage County UFO Chase. Read Nelson's paper in the 2007 MUFON Symposium Proceedings, then tear it out as none of it is based in fact. [See www.scribd.com/doc/21437855/November-2007; a full account of this famous UFO police chase, depicted in the movie *Close Encounters of the Third Kind*, is in my book *UFO Sightings* (Prometheus 1998).]
>
> 2007—The California Drones story for which not a single, verifiable beyond reproach, real witness can be found. [See "Psychic Vibrations" column, SI, January/February 2010.]
>
> 2008—The Stan Romanek [ET visitation] claims which are not only unverified by science (despite what he says) but involves [sic] the shameful practice of investigators ignoring professional standards by fraternizing and becoming emotionally involved with the subject of their investigation. [See "Psychic Vibrations" column, SI, September/October 2008.]
>
> 2009—Unsettling information I discovered with Dr. Frank Salisbury about the Skinwalker Ranch that calls into question the validity of experiences described in the book "Hunt for the Skinwalker." [See "Psychic Vibrations" column, SI, March/April 2007.]

I realized that Carrion was skating on thin ice at MUFON, so his departure is not surprising, although I never expected such a saucy send-off. Carrion concludes, "That in a nutshell is the sad state of UFOlogy today, humans deceiving humans. If there is a real phenomenon, I have yet to see any evidence of it that would stand under scientific scrutiny."

But organizations like MUFON cannot survive on a fare of UFOlogical caution and caveats. Its members want validation of their passionate belief that extraterrestrials or other exotic beings are visiting us. If they don't get it, they'll leave. In the 1980s and '90s, Walt Andrus alienated many halfway-objective UFOlogists with MUFON's hard-line defense of the transparently bogus Gulf Breeze UFO photos of Ed Walters. But it apparently did wonders for the organization's bottom line, because members of groups like MUFON want "red meat": stories of amazing encounters, abductions, and government conspiracies. Succeeding Carrion as MUFON's international director is Clifford Clift, a veteran UFOlogist and MUFON field investigator. Clift says that he has been a believer in UFOs since sighting a light in the sky as a child in the early 1950s. "I believe the UFOs exist, they are manufactured objects and they are not of this Earth," he said (see http://tinyurl.com/CliftUFOtalk). Clift will likely get along much better with MUFON's officers and members.

* * *

Residents of the tiny town of Harbour Mille, along the southern coast of Newfoundland in Canada's Maritime Provinces, reported and photographed

what were called "missiles" flying just off the coast (see http://tinyurl.com/rockets NL). It began at about 5 PM on January 25, 2010, when Darlene Stewart went outside to photograph the sunset and saw "a long, thin glimmering object in the sky that appeared as if it came out of water." She called her friend over, who later stated, "I saw a humungous bullet, silver-grey in color and it had flames coming out of the bottom and a trail of smoke." The object remained in sight for about fifteen minutes (far too long to be any kind of missile).

Some attributed the sighting to small rockets launched by amateurs who sometimes launch from that area. Liberal Senator George Baker found a politically acceptable explanation for the matter: blame France, whose nearby island Saint-Pierre was in the direction of the sightings. "Knowing that France has territory within our 200 mile zone in Canada, they should at least ask the French, 'Look, are you launching these missiles?' Because if they are, [and] everybody is denying knowledge of it, then the laws have been broken." But the French replied that they had not launched any missile anywhere on that day. So what kind of missile was it?

None at all, says Finnish UFO researcher Bjorn Borg. He calls it "the December Phenomenon" because "every year this comes up in the news." What people are actually seeing, he said, are jetliner contrails catching winter sunlight, an optical illusion created when the angle between the setting sun and the jetliner is just right (see http://tinyurl.com/rocket-illusion). "The sun is shining on the [condensation] trail. In winter time, the color of the trail will show up [in] very strong yellow or even red. It looks like fire." Chris Stevenson, local president of the Royal Astronomical Society in Newfoundland, said, "I've seen this several times." He explained that transatlantic aircraft reflect sunlight far overhead after daylight has faded on the ground, appearing a deep reddish color. Besides, "a rocket plume would be thick all the way back to where the rocket was launched," he explained.

* * *

If photos of rockets don't impress you sufficiently, then prepare yourself to see the "First Ever Photograph of an Extraterrestrial," courtesy of CSETI (Center for the Study of Extraterrestrial Intelligence, a far-out UFO group, not to be confused with the scientific Search for Extraterrestrial Intelligence [SETI]). Of course, a number of photos of *alleged* extraterrestrials have been released in the past, but apparently all of those were fake, and CSETI has snapped the first *authentic* one.

According to the report, the photo was taken on November 17, 2009, in Joshua Tree National Park in the California desert east of Los Angeles, not far from where the late, great George Adamski used to meet up with his extraterrestrial pals. (Aliens seem to like deserts, except when their saucers crash there.) The "CSETI staff and a group of forty national and international students spent six nights deep in the park, learning and practicing the contact protocols. . . . A series of remarkable—and historic—events transpired, including the visit of an extraterrestrial being within a few feet of the contact team, photographed by a senior team member." According to CSETI, "This photograph offers extraordinary evidence of interstellar, transdimensional technology, and the efficacy of CSETI contact protocols."

Dr. Steven Greer, who is the director of CSETI and the well-publicized Disclosure Project, writes:

> You will note that the ET is suspended in a cone of light which is originating from a small orb to the left of the bush. . . . The ET appears to be a male, wearing a type of vision augmenting goggles, with a very large head with an indented area demarked by ridges in the forehead. The hairline, ears, eyes, mouth and chin are clearly visible. Both arms can be discerned, as well as a torso and both legs, with boots on the feet. He is hovering a foot or two above the chairs that make up our contact circle, and is just east-southeast of the circle. His size is estimated at 3–5 feet in height. Note that he is leaning forward, with his torso and head twisted to look directly at the camera. His right leg is bent behind him.

Unfortunately, "neither the orb nor the ET being was seen with the naked eye," but Greer goes on to explain how cameras can sometimes record objects that the eye cannot.

It's definitely worth taking a peek at the photo on the CSETI Web site (www.cseti.org/reports/joshuatree09.htm), which claims, "These photos look much clearer when viewed on a High Definition computer screen or a High Definition TV screen." It just looks like a confusing blur to me, no matter how many times I enlarge it. Similarly, I can't make out all those alien artifacts people see in photos from the Moon and Mars. I think I need a new monitor.

* * *

I hate to bring up "exopolitics" once again, after having written about it in several recent columns, but the stories its proponents spin out keep getting unbelievably weirder and weirder—and yet some people still apparently take them seriously! In my last column (SI, May/June 2010), I discussed the claims about secret teleportation and time-travel projects by Washington State lawyer Andrew D. Basiago. How do you top that? Well, he has: Basiago has teamed up with Laura Magdalene Eisenhower, the great-granddaughter of Dwight Eisenhower, claiming to reveal a "secret Mars colony" that is "funded by black budget military and intelligence sources as a survival mechanism for the human genome in the event that solar flares, nuclear war, or some other cataclysm ends human life on Earth" (see http://tinyurl.com/MarsSecret).

In fact, Basiago claims to have been teleported twice in 1981 to a secret U.S. base on Mars, a journey he neglected to mention in his earlier writings when he claimed the momentous discovery of living things on Mars in photos taken by NASA's Spirit Rover (see http://tinyurl.com/BasiagoMars). Surely, he must have picked up more information about the native Martian fauna during his sojourn on Mars than he could have gained from scrutinizing NASA photos.

As one might expect, the proof to support this claim is pretty thin. Eisenhower claims she was "the subject of a sophisticated attempt to recruit her into the secret Mars colony in 2006 that she

broke free from after resisting its deeply rooted manipulations and chose to live out her destiny on Earth." As for Basiago, he speculated that "the Mars colony is being staffed by individuals who descend from specific Aryan bloodlines that contain a Martian genetic substrate and that do not represent the genetic diversity of the entire human race on Earth." Both urge "a treaty between Earth and Mars society that would establish a Mars protectorate and normalize diplomatic recognition and immigration between the two planets." Immigration? From Mars? Did I miss something? Who or what is going to immigrate?

But UFOlogist Art Greenfield isn't buying any of this talk from those he calls "exo-political posers." He is the author of *Warning*, a book revealing how "Reptoid aliens have been using us as a food resource for thousands of years. They came from Earth originally. . . . The government knows about it but keeps quiet to avoid public panic" (see http://antigray.tripod.com/). President Obama, whom he describes as "the Repto Sapien's mindless telepromptor handpuppet," is "about to sign an arms reduction treaty with the Russians to dismantle much of our nuclear arsenal. HELLO! That would result in both the Russians and us having less nukes that we might need to defend ourselves against a hostile alien takeover." Greenfield concludes, "let's stop wasting any of your valuable mental computer time on the likes of [expolitics promoters] Webre and Salla and get back to solving any problems that stop us from getting on a military parity with the Repto Sapiens. We need to negotiate with them from a position of strength to persuade them to let us supply them food from sources lower down on Earth's food chain." Let 'em eat krill.

* * *

Assuming that humanity survives the ending of the Mayan Calendar in December 2012 (not to mention Harold Camping's prediction that the Rapture will begin in May 2011) and that we don't get eaten by Reptoids in the meantime, the world is next scheduled to end in 2017. "Invasion 2017" is being trumpeted by Jerry Pippin's popular UFO-related Internet radio show. He promises to spill the beans on "a huge armada of UFOs coming to Earth in 2017," with "complete desecration of the ETs including Reptilians, The Tall Whites and the Conformers." (I believe Pippin means "description," not "desecration," but that's what it says on www.jerrypippin.com/2017_invasion1.htm.) "In addition to the Pickering Brothers we will present testimony by Charles Hall of his encounters with the Tall Whites while serving in the US Air Force at Nellis Air Force Base and other testimony by those who claim they know about the secret UN meetings with ETs and other events around the world." Invasion 2017—are you ready? □

Ray Hyman | James Alcock | Loren Pankratz | Anthony Pratkanis | Harriet Hall, MD | Lindsay Beyerstein

The Skeptic's Toolbox

University of Oregon at Eugene | August 12–15, 2010

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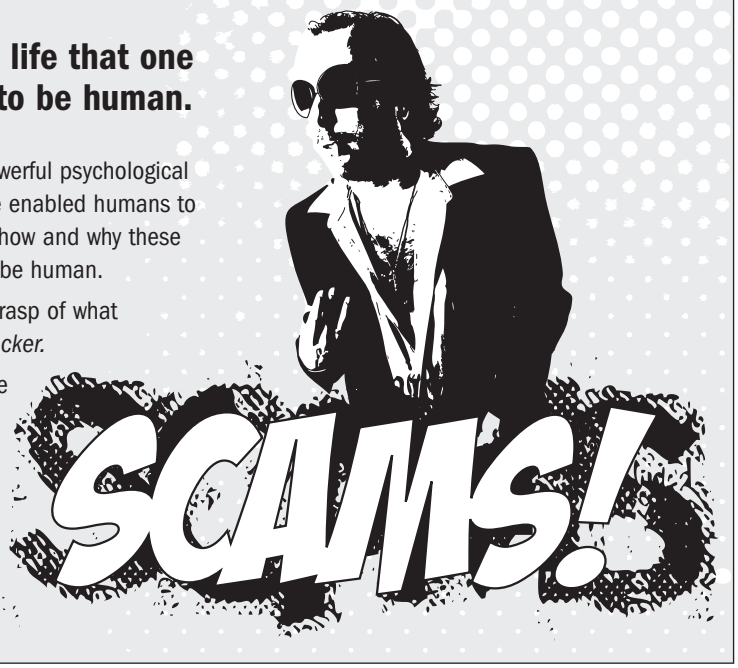

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Scientists: High Time for Medicine to Adapt to Evolution

Insanity, a great innovator is said to have observed, is doing the same thing over and over again while expecting different results. In the March 22, 2010, *Newsweek*, pediatrician Claire McCarthy bemoaned the medical profession's failure to contain the epidemic of childhood obesity. After acknowledging Einstein's maxim, McCarthy offered what she deemed a practical new solution. Rather than simply discussing the benefits of exercise and healthy eating with children and their parents, she advised that physicians should scare them with the facts, encourage immediate action, and celebrate their incremental victories. This is all well and good, perhaps—but does that really sound like the caliber of change we can expect to produce novel results?

In *The Evolution of Obesity* (Johns Hopkins, 2009), medical researchers Michael Power and Jay Schulkin suggest a fundamentally different approach. Absent an understanding of the epidemic's "how and why," they reason, all "attempts to modify obesity within individuals will be problematic, if not doomed to failure." We should view obesity, they say, less as a pathology and more as an incongruous adaptation. To confront the predicament—even at the clinical level—physicians must comprehend its underlying biology and, thus, "the evolutionary events and pressures that have shaped our adaptive responses to hunger, food, exertion, and energy stores that, in today's world, may not be as appropriate as in the past."

As advances in genetics, genomics, neuroscience, and microbiology mount at a truly awe-inspiring pace, many biologists and some medical experts are stepping forward to insist that the moment has finally arrived for medicine to fully acknowledge its scientific bedrock. For the benefit of their patients and the global societies in which they now live, physicians too must appreciate evolution as the organizing principle of all biology.

Peter Gluckman, Alan Beedle, and Mark Hanson, biomedical experts and authors of a new textbook titled *Principles of Evolutionary Medicine* (Oxford, 2009), appear to agree. Contrary to their patients' best interests, they say, physicians generally have settled into "reductionist approaches" to medicine, focusing narrowly on body parts and systems and the immediate or "proximate" causes of disease. "Ultimate" or evolutionary causes are largely ignored. But the latter perspective, the authors propose, "not only helps to identify research questions, but also allows engagement with individual patients in ways which promote understanding of their current health status and which also contribute to the design of appropriate interventions in public health."

Similarly, in the recently published *Textbook of Evolutionary Psychiatry: The Origins of Psychopathology* (Oxford, 2008), professor of psychiatry Martin Brüne demands "radical revision" of his profession's current paradigm characterizing knowledge of evolutionary principles as interesting but superfluous. "If psychiatry wants to survive," he counsels, "it can no longer be satisfied with a knowledge base that covers just 50 percent of what is needed for a full comprehension of psychopathological conditions." Understanding the ultimate causes of cognition, emotion, and behavior, he believes, is "absolutely essential" to the intelligent diagnosis and effective treatment of mental disorders.

But despite these lively appeals and the dizzying tempo at which new evolutionary applications to various medical problems are being discovered, no medical school in the United States currently offers a course on evolutionary medicine. Not one maintains a

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department of evolutionary biology or even a single faculty member—apart from geneticists, arguably—specializing in evolutionary applications to medicine.

I asked University of Michigan professor of psychiatry Randolph Nesse—who does specialize in such applications—to assess the situation from his standpoint. The gap in evolutionary education among physicians, he advises, "is wide and serious." By the time they enter practice, most physicians have received far more instruction on quantum physics than in evolutionary biology, and because they lack a solid theoretical foundation, many have no idea why people age or even how cancer arises. It's akin to "engineers not understanding the first law of thermodynamics," he chides, "or thinking that heavier objects fall faster."

Nesse and Stearns were among four prominent American scientists who organized "Evolution in Health and Medicine," the Arthur M. Sackler Colloquium of the National Academy of Sciences held on April 2–3, 2009, in Washington, DC. Their goal, according to Stearns, was to "raise awareness in the medical community that evolutionary biology had helpful insights into medical problems that were being missed by other perspectives." The event was covered by *Science* magazine, and the provocative results were released in a multi-paper supplement to the January 26, 2010, *Proceedings of the National Academy of Sciences* (*PNAS*).

In a summary article, "Making Evolutionary Biology a Basic Science for Medicine," an international team of thirteen medical and biological experts, including

By the time they enter practice, most physicians have received far more instruction on quantum physics than in evolutionary biology.

When I asked Yale University ecologist and evolutionary biologist Stephen Stearns to comment, he confided that "resistance is both practical and political." The medical curriculum is already packed with essential or at least contributive classes, of course, and is "thought to be functioning well by those teaching it." Yet evidence from the front lines seems to suggest glaring deficiencies. For example, Stearns adds, "The over-prescription of antibiotics, particularly by pediatricians, often for viral infections that do not respond to antibiotics, continues to be widespread despite the fact that the rapid evolution of antibiotic resistance is the best understood example of evolutionary medicine." The consequences of such uninformed treatment to the patient, he warns, could prove "difficult, expensive, and perhaps insoluble."

Nesse and Stearns, argued for more integrative medical education and outlined their specific suggestions. A more penetrating comprehension of evolutionary processes, they claim, "helps to correct the prevalent dependency on the metaphor of the body as a designed machine." To the contrary, the human form is more accurately characterized as a "jury-rigged system" better understood as a series of compromises shaped by natural selection to maximize reproductive viability rather than health. Only when students are required to overhaul the former, erroneous mindset, the authors insist, will they gain a "deeper understanding of the body and why it is vulnerable to disease."

So what should every doctor know? Eschewing actual course recommendations in favor of competency and learning objectives, the team tackled the premedical curriculum first. In order to understand evolutionary "tradeoffs," for instance, undergraduates should know that nature has not selected for a thicker distal head on the human radius bone in order to thwart fractures because such an adaptation would limit wrist flexibility. They should also know how to use comparative data among primates, the authors contend, to show why humans could not have evolved to eat only vegetables—because our shorter guts and smaller teeth were selected to consume more easily digestible fruits and protein-packed meats.

They should also comprehend the evolutionary explanation for why young women who regularly and vigorously exercise might experience the cessation of sexual cycling—because intense physical exertion was once indicative of severe environmental stress that endangered fetuses and pregnant women. Similarly, women beyond reproductive age can nevertheless influence their inclusive genetic fitness by caring for their daughters' children. These kinds of learning objectives, the team agrees, are "more directly relevant to medicine" than some others proposed by the American Association of Medical Colleges (AAMC) and the Howard Hughes Medical Institute (HHMI) advocating familiarity, for example, with the fairly abstruse principles of quantum mechanics.

While again conceding that medical school curricula are already bursting at their seams, the authors nonetheless propose a challenging set of objectives for professional students as well. They should grasp the concept of "facultative adaptation" and know why calorie deprivation and stress during early life can affect later metabolism. They ought to understand the evolutionary tradeoffs that likely resulted in the uniquely narrow human birth canal that, although dangerous to both mother and child, is essential for proficient bipedalism. So, too, should they know how "path dependence" leaves evolved organisms far short of the machine-like ideal—consider, for instance, the often excruciatingly problematic human spine.

Medical students should also be well versed, the authors say, in the co-evolution of hosts and pathogens and capable

of explaining how "arms races" render us vulnerable to disease. They ought to be familiar with the potentially negative health consequences of antibiotics and modern hygiene practices—allergies, asthma, and autoimmune diseases, for example—that can disrupt important signals our bodies would otherwise receive from the pathogens with which we evolved. And certainly soon-to-be doctors should appreciate how antibiotic resistance can emerge and spread in dreadfully short periods of time and when their future patients can safely use drugs that block critical evolutionary defenses like pain sensitivity, fever, anxiety, and depression.

In "The Great Opportunity," an *Evolutionary Applications* paper published in 2008, Nesse and Stearns argue that evolutionary biology provides physicians with "an otherwise missing paradigm" that could help them "make sense of why disease exists at all, what environments increase the risk, and how treatments work." Although the regrettable medical trend is to "just carry out protocols," they advise, "better decisions come from doctors who understand the ecology of immune responses, the evolutionary reasons for polygenic diseases, the phylogeny of cancer cells, and the origins of antibiotics," among other principles.

Only a few years ago, for example, medical students were erroneously instructed that pathogens tend to coexist with their hosts because killing them would be counterproductive. But a more nuanced evolutionary view recognizes that virulence is leveled to maximize transmission. If bedridden hosts will do the trick—think cholera victims who suffered from diarrhea prior to modern sanitation—then virulence levels might be high. If not, pathogens could indeed benefit from healthier, more ambulatory hosts capable of infecting others more directly. Then again, the authors reiterate, modern sanitation practices can bear deleterious effects on human health as well. Many scientists believe that certain autoimmune diseases, including asthma, diabetes, and childhood leukemia, can result from the absence of helminth parasites that until very recently evolved in our guts.

Hospital directors who currently choose to rotate antibiotics hoping to prevent resistance by exposing bacteria to changing selective regimes might also benefit from a more sophisticated knowledge of evolutionary science. "At least in principle," Nesse and Stearns propose, "hospitals would do better to use a mix of different drugs on different patients simultaneously, rather than to cycle through [them] over time." And perhaps medical staff should pay closer attention to the current evolutionary debate on whether influenza kills directly or through the effects of released inflammatory agents. "If the former is true," the authors warn, "anti-inflammatory drugs will increase death rates, [and] if the latter is true it will decrease them."

Though currently misunderstood as the inevitable result of wearing body parts, aging is actually an evolutionary tradeoff that almost always favors reproductive success among the young over life span.

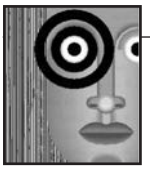
And evolutionary insights might one day spur medical researchers to conquer even the most universal and seemingly intractable malady in natural history—aging. Though currently misunderstood as the inevitable result of wearing body parts, aging is actually an evolutionary tradeoff that almost always favors reproductive success among the young over life span. In the March 25, 2010, issue of *Nature*, however, biochemist Cynthia Kenyon calculates that, relative to our common ancestor with nematodes, "over evolutionary time mutations have increased [the human] lifespan more than 2,000-fold."

More specifically, she notes, in very harsh environments or under severe dietary restrictions, certain regulatory genes in many species, including some primates, can actually shift focus to extend life span in order to preserve youthful organisms for future reproductive opportunities. So perhaps animal longevity can be unleashed, and the diseases of aging ameliorated, simply by tweaking a few genes. Though in nature these shifts represent a rare exception to an otherwise clear evolutionary rule, Nesse and Stearns cautiously observe, "The ancient dream of extending lifespan no longer seems like just a dream."

Consistent with recommendations widely agreed upon at the Sackler Colloquium, scientists urge the AAMC, the HHMI, and the Institute of Medicine to convene with evolutionary biologists to address these issues further. The science is very difficult, they agree. Every new evolutionary hypothesis must be assessed rigorously and with exacting skepticism, especially those pertaining to cognition and emotion. In the introductory article to the *PNAS* supplement, "Evolutionary Perspectives on Health and Medicine," the colloquium's organizers ask whether the increased investment can be justified. Evolutionary principles, they conclude, "are already saving lives, reducing suffering, and can help us to avoid major unpleasant scientific surprises."

Indeed, the most profound advantage of evolutionary thinking in medicine might be its distinctively predictive quality. Perhaps a renovated medical perspective accounting for natural selection and other evolutionary processes could propel medicine in an entirely new direction that, to the unambiguous benefit of patients (though maybe not initially to the healthcare and pharmaceutical industries), emphasizes anticipation and prevention over belated treatment.

To learn more, consult *The Evolution and Medicine Review* (http://evmedreview.com). □



The Mysterious Invisible 'Rods'

Q: I've been told there are small creatures called rods—which are shaped like, well, rods—that fly so fast they're invisible. Is there any truth to this? And where does such a claim come from?

—D. Phillips

A: Rods are a footnote in forteana, a blip on the paranormal radar. What are they? It depends on who you talk to. Some believe they are extraterrestrial entities; others believe they are a species of unknown invisible animals. (One might think that animals, whether invisible or not, that zoom through the air at high speeds might have been noticed by now—if only because they would regularly collide with people and objects.)

Curiously—and very tellingly—rods almost invariably appear only in photographs, films, and videotapes. To an investigator, this is a big red flag suggesting that the phenomenon is a photographic artifact. In a nutshell, rods are to cryptozoology (or UFOs) what orbs are to ghosts.

The main proponent of the rod phenomenon is a man named Jose Escamilla, who first "discovered" and publicized it in 1994. Escamilla's rods "allegedly zip through the air, never seeming to stop or slow down [and] have been seen almost everywhere that anyone has bothered to look for them. . . . The best way to spot them is to take a video or movie camera and point it at the sky. Sooner or later some little dark spot will be seen to zip across at high angular velocity, and when it does you will have a rod sighting" (Sheaffer 2000). So what might these mysterious, elongated, blurry "rods" caught on video be?

Bob DuHamel, editor of *AmSky*, an online amateur astronomy magazine, wrote a detailed analysis of Escamilla's "rods." He began by noting a photographic phenomenon "so unremarkable as to be virtually ignored"—namely that fast-moving objects appear elongated in photographs. "When a blurred streak appears on a photograph most of us will see it as a fast moving object; Jose Escamilla sees [it] as an unidentified life form" (DuHamel 2000). Are the rods perhaps merely flying insects caught on film?

Doug Yanega, an entomologist at the University of California at Riverside, noted that a rod is "a videographic artifact based on the frame capture rate of the videocam versus the wingbeat frequency of the insects. Essentially what you see is several wingbeat cycles of the insect on each frame of the video, creating the illusion of a rod with bulges along its length. The blurred body of the insect as it moves forward forms the rod, and the oscillation of the wings up and down form[s] the bulges. Anyone with a video camera can duplicate the effect, if you shoot enough footage of flying insects from the right distance" (quoted in Carroll 2003).

Still, Escamilla is undeterred. He has created a Web site featuring pictures of his rods and a documentary film about the subject. Escamilla's rods are a classic example of how "unexplained" phenomena often occur: someone notices something he thinks is odd or unexplainable and assumes that because he can't understand it, it must be novel or mysterious. □

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A Skeptic's View of Pharmaceutical Progress

Although the pharmaceutical industry has engaged in some questionable practices, an objective scientific overview reveals substantial life-saving progress over the last thirty years.

REYNOLD SPECTOR

In the late 1980s and early 1990s, one pharmaceutical company was named the world's "most admired" company by *Fortune* magazine seven years in a row. During those years, the pharmaceutical industry was widely recognized for its integrity and productivity. What more noble activity is there than curing or preventing disease? Much of the progress in the pharmaceutical industry was based on foundational biological science performed by academicians and government scientists.

However, for the last ten years, there has been intense criticism of the research pharmaceutical industry over questionable practices (see table 1) (Angell 2004, 2008; Relman 2008; Steinbrook 2009). Although the industry argues that

Table 1

Questionable Practices

1) Direct-to-consumer (DTC) advertising
2) Concealment of negative drug data
3) Excessive spending on misleading and/or non-comparative advertising
4) Hiring of "ghost-writers" to write manuscripts for prominent academicians
5) Excessive payments to "thought leaders"
6) Payments to practicing physicians to encourage specific drug use
7) Scientifically worthless seeding studies
8) Publishing only positive data
9) Biased "educational" talks/literature for physicians
10) Excessive pricing of new products

Table 2

Properties of Ideal Drugs or Vaccines

A) Pharmaceutical properties of an ideal drug
   1) Selective, single mechanism of action, potent, and works consistently in all treated persons
   2) Once a day or less dosing without food interactions or need for blood level monitoring
   3) Works consistently on surrogate markers (e.g., blood pressure), alters natural history of disease, and is safe—often saving lives and preventing morbid events like heart attacks and strokes

B) For an ideal vaccine, it must be safe, bring about effective immunity, and prevent the targeted disease in all vaccinated persons

C) Ideal drugs and vaccines must stand the "test of time"

many of these practices are actually positive (e.g., direct-to-consumer advertising "educates" the public), the consensus of those outside the pharmaceutical industry is that these practices are, on balance, harmful. In fact, although there are many well-documented flagrant examples in newspapers, magazines, and books, it is extremely difficult to obtain quantitative data on the frequency of these practices. However, in general, I agree with these criticisms (see table 1). The industry has also been criticized for the lack of research and development productivity considering the amount of money spent.

But to obtain a balanced view of pharmaceutical progress (or lack thereof), we need to step back, define a few terms and concepts, and make explicit certain assumptions. Only then can we evaluate the "good" done by new pharmaceutical products over the last thirty years versus the abuses in table 1. I will refer to drugs by their chemical names and use generic (off patent) examples as much as possible, since generics are generally much cheaper and in many cases as good as or better than brand name drugs in their class.

Obviously, pharmaceutical agents, including vaccines, should prolong life or significantly decrease clinical disease and its attendant pain and suffering with minimal or no side effects. In other words, the risk/benefit ratio should favor the patient and the costs should be reasonable.

Generally, in thinking about prevention and treatment, we divide prevention of disease into two categories: primary and secondary. Primary prevention is treatment in high-risk persons to prevent disease; secondary prevention is treatment to prevent further disease. Examples of primary prevention are vaccines to prevent disease or the use of a now generic statin (e.g., simvastatin) to prevent heart attacks and strokes in high-risk persons. With simvastatin, secondary prevention would prevent deaths and further heart attacks and/or strokes in patients with previous episodes (see below). Treatment is the use of drugs to ameliorate disease—sometimes with a curative intent.

To prove the value of preventatives (including vaccines) and treatments, the European Medicines Agency and the U.S. FDA have rigorous "gold standard" criteria discussed in the Methodological and Statistical section of a recent article in the SKEPTICAL INQUIRER and other publications (Spector 2009; Spector and Vesell 2006a). Generally, this involves doing two large (i.e., thousands of patients) randomized blinded trials of the drug versus a placebo (or comparator agent) that both show statistically significant results (Spector and Vesell 2006a). These studies are carried out after dose-finding studies in which the correct dose is determined. Ideally, the endpoint of such trials should be the number of deaths or events (e.g., heart attacks), but sometimes surrogate markers are accepted (e.g., lowering blood pressure or cholesterol) (Spector and Vesell 2006a).

Implicit in these standards is the definition of an ideal drug or vaccine (see table 2) (Spector 2002). Note that ideal drugs and vaccines must also stand the "test of time." Table 3 shows examples of ideal (or near ideal) drugs discovered, developed, and marketed in the last thirty years. There is now nearly universal agreement (because of the large number of controlled trials) that moderate doses of statins not only lower blood cholesterol but substantially decrease death (secondary prevention) by about 30 percent and heart attacks and strokes by 30 to 50 percent (Scandinavian Simvastatin Survival Study [4S] 1994). To show the quantitative importance of these results,

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based on data from the 4S trial in patients with stable heart disease or angina, 12 percent died on placebo and only 8 percent died on simvastatin in five years. This 4 percentage point differential (assuming there are ten million U.S. patients with stable coronary heart disease [CHD], a conservative estimate, who took simvastatin) amounts to four hundred thousand fewer deaths due to the drug in five years. Aspirin, beta-blockers, and angiotensin converting enzyme (ACE) inhibitors or sartans (see below) each save about 5 to 15 percent of lives in such patients. When statins are appropriately combined with these drugs, there is probably about a 50 percent improvement in survival, or six hundred thousand lives (per ten million) saved in CHD patients over five years (Baker et al. 2009). In primary prevention, statins decrease heart attacks, strokes, and procedures by 20 to 50 percent depending on the population (Baigent et al. 2005; Brugts et al. 2009). The side effects and cost of moderate doses of statins (now generic) are generally not issues. Notwithstanding these impressive results, there is obviously more work to be done.

The now generic ACE inhibitors and the newer sartans effectively lower blood pressure with minimal side effects and decrease strokes, heart failure, and kidney damage (see table 3) (Spector and Vesell 2006b).

Proton pump inhibitors (PPI), which block stomach acid secretion, have had a huge impact on common stomach and esophageal disorders—disorders, in large part, due to stomach acid—including dyspepsia, ulcer, gastritis, and esophagitis due to acid reflux. Moreover, stomach operations for the complications of stomach and duodenal ulceration (perforation, obstruction, bleeding, and intractable pain) since the marketing of histamine blockers and especially PPI have decreased dramatically. Millions of Americans with these problems have been cured or have had their symptoms controlled with a safe daily pill or two—and no surgery (Spector and Vesell 2006c). *Helicobacter pylori*, a bacterium that often plays a contributory role in stomach ulceration, is also eliminable with antibiotics (Spector and Vesell 2006c). (This latter work led to a Nobel Prize.)

Certain newer antibacterial agents, including penems and ceftriaxone, save lives with minimal side effects. The penems have a very broad spectrum and kill bacteria (i.e., they are bacteriocidal). Similarly, ceftriaxone is generally bacteriocidal and needs to be given parenterally (i.e., by injection) only once daily—thus allowing for outpatient therapy of serious bacterial infections.

The vaccines listed in table 3, marketed over the last thirty years, are remarkably effective and safe. These vaccines are over 95 percent effective in preventing clinically significant disease (Offit 2008). One exception is the varicella vaccine, after which mild cases can still occur.

Finally, table 3 contains three examples of cancer chemopreventatives. Hepatitis B, which in the past has infected hundreds of millions of people, can be eliminated by vaccination, with an attendant decline in liver cancer—a consequence of chronic hepatitis B infection (Offit 2008). Similarly, the current papilloma virus vaccines prevent infection with virus types 16 and 18, reducing cervical cancer in women by about 70 percent. And 5-alpha-reductase inhibitors can decrease cancer of the prostate by about 20 percent. These three examples are one of the few bright spots in the war on cancer (see below).

Table 3

Examples of Ideal or Near Ideal Drugs and Vaccines

Drugs

Class	Generic Examples	Surrogate Markers
1) Statins	simvastatin	cholesterol
2) Ace Inhibitors	enalapril	blood pressure
3) Sartans	losartan +	blood pressure
4) Proton Pump Inhibitors	omeprazole	stomach acid
5) Antibiotics	imepenem+; ceftriaxone+	bacterial killing

Vaccines (disease prevented)

1) Hepatitis A
2) Hepatitis B
3) Varicella (chicken pox)
4) Rotovirus (diarrhea)
5) Hemophilus influenza (meningitis; croup)
6) Papilloma virus (genital warts; cervical cancer)

Cancer Chemopreventatives	Cancer Prevented
1) Hepatitis B vaccine	liver
2) Papilloma virus vaccine	cervical
3) 5-α–reductase inhibitors (e.g., finasteride)	prostate

+ Not yet generic

Table 4

Examples of Useful but Not Ideal Drugs and Vaccines

Drugs

Class	Generic Examples	Surrogate Markers
1) Bisphosphonates	alendronate	bone mineral density
2) Calcium channel blockers	amilodipine	blood pressure
3) Histamine-2 (H-2) blockers	famotadine	stomach acid
4) TNF-α blockers	etanercept +	inflammation; joint destruction
5) Selective Serotonin Reuptake Inhibitors (SSRI)	fluoxetine	depression score

Vaccines (Disease Prevented)

1) Herpes Zoster (shingles)
2) D. Pneumococcus (infections in children)
3) Influenza (pneumonia)

+ Not yet generic

Examples of moderately useful drugs are shown in table 4. Before the mid-1990s, there were no useful, nonhormonal drugs for the treatment and prevention of osteoporosis and fractures—

Table 5

Examples of Marginal Drugs

Class	Generic Example (dose)	Use
1) Nonsedative antihistamines	loratadine (10mg)	allergic rhinitis
2) Anticholinergics	tolteradine (4mg)+	urinary tract urgency/ incontinence
3) Cholinesterase inhibitors	tacrine	Alzheimer's disease
4) Leukotriene blockers	montelukast (10mg)+	allergic rhinitis

+ Generic not yet available

a huge clinical problem. Now, bisphosphonates can prevent approximately 50 percent of vertebral fractures and 25 percent of hip fractures—a good but obviously imperfect result. Moreover, they can be taken orally once weekly, once monthly, or intravenously once yearly (Spector and Vesell 2006b).

The new calcium channel blockers are effective agents in the treatment of high blood pressure but cause edema (swelling) in 5 to 15 percent of users. They do, however, prevent strokes, renal damage, and heart failure more than placebo.

The H-2 histamine blockers inhibit histamine-stimulated acid production by the stomach but are not as effective as the PPI discussed in table 2. However, for the treatment of milder acid-induced stomach disorders (heartburn, dyspepsia, esophageal reflux), they are useful, safe, and very inexpensive.

The tumor necrosis factor alpha (TNF α) blockers are the first of the biotechnology drugs useful in crippling rheumatoid arthritis (RA) and psoriasis. However, they have substantial and serious side effects, placing some patients at risk of severe infectious diseases. Their ability to slow or stop the relentless progression of RA puts the risk/benefit ratio in most patients' favor, but these patented drugs are also expensive.

Finally, the SSRIs (see table 4) have a complex developmental history in the treatment of depression and generalized anxiety, but what is now clear is that the SSRIs are barely better than placebo in patients with mild depression (Mayer 2008). In severe depression, however, they are unequivocally useful with acceptable side effects. Severe depression is a devastating disease that ruins lives and can lead to suicide and other dire consequences. The SSRIs are helpful in these patients but by no means generally curative (Mayer 2008).

The three vaccines listed in table 4 (which were developed in the last twenty years) prevent shingles, childhood pneumococcal infections, and influenza, respectively, in 25 to 75 percent of vaccinated subjects. Specifically, the shingles vaccine prevents 75 percent of severe cases of shingles and 50 percent of total cases. Severe cases of shingles can affect the eye, causing terrible pain and damage to the cornea with loss of vision; more commonly, shingles can cause a severe chronic pain syndrome in the affected area that, on occasion, can drive people to suicide. The problem with the influenza vaccine is that it is formulated and manufactured before the flu season and thus sometimes the current formulation is ineffective against the current strain (compare the unexpected outbreak of "swine" flu in 2009).

Shown in table 5 are examples of FDA-approved drugs that are barely better than placebo on the average ($P < .05$ in two studies, although there were also negative studies) (Spector and Vesell 2002; 2006a). For example, loratadine is about 12 percent better than placebo (on the average) in relieving symptoms of allergic rhinitis; montelukast is even worse (about 6 percent), according to the company's own label. To me, it seems outrageous to pay around $3 for a tablet of montelukast for a 6 percent chance of effect, when safe generic drugs yield a 20 to 60 percent response and are cheaper. In my view, the wide use of montelukast for allergic rhinitis is an example of the power of noncomparative direct-to-consumer advertising (see table 1). Similarly, 4 mg of tolteradine daily (for overactive bladder) gives (net of placebo) a less than 10 percent decrease in trips to the bathroom (micturations) and a less than 20 percent decrease in "accidents" (incontinence). Tolteradine also has side effects (e.g., dry mouth, urinary retention) and contraindications to its use. Finally, tacrine is livertoxic, and it has never been established that tacrine has clinical utility.

I would place many of the newer cancer drugs, especially the biotechnology agents, in table 5. In fact, in a recent thoughtful analysis of cancer therapy, Gina Kolata (2009) of *The New York Times* pointed out the minimal progress (with a few notable exceptions, like the treatment of chronic myelogenous leukemia with Gleevac) in the "war against cancer." She points out that we are only 5 percent better off today than we were in 1950, notwithstanding billions of dollars spent on cancer research and treatments. Alas, there has been little progress against the major cancers (e.g., lung, stomach, pancreas, brain, breast, renal, etc.) when surgeons cannot totally remove it. (For more, see Kolata's piece and my article "The War on Cancer: A Progress Report for Skeptics," SI, January/February 2010.) This is in stark contrast to the tremendous progress against heart disease and stroke.

Discussion

As a society, where should we go from here with the problems outlined in table 1? Notwithstanding the hundreds of articles and books (see, for example, Angell's work in 2004 and 2008), as noted above, it is difficult to assess quantitatively the magnitude of the questionable practices in table 1. In fact, though we have all seen fancy mainstream drug advertising that contains no quantitative data (e.g., how much improvement there is on the average) or important comparative data (e.g., in allergic rhinitis ads), there are some advertisements that are accurate and informative. But clearly misleading direct-to-consumer ads should be stopped.

There is also no doubt that some companies have flagrantly covered up negative data. In some cases, after being "caught" the companies paid hundreds of millions of dollars in fines or, in one recent case, settled with harmed patients for $5 billion (Singer 2009).

Almost everyone outside the industry feels an excessive amount of money is spent on misleading advertising—especially for drugs like those in table 5 that would not "sell themselves." Also, the use of ghost writers and excessive payments to thought leaders, florid conflicts of interest, and payments to practicing physicians to encourage specific drug use clearly occur (see table 1). These practices should be outlawed (Steinbrook 2009).

Finally, scientifically worthless seeding studies (i.e., studies that do not test a hypothesis but are meant to familiarize physicians with the drug with the intent of increasing sales) may be on the wane, as is publishing only positive data and encouraging biased talks and literature. The press, academicians, journals, and public have wisely cracked down and lampooned such practices endlessly.

However, I submit that incredible good has been done by the drugs and vaccines in tables 3 and 4 (and many others not mentioned because of space limitations, like erythropoetin for certain types of anemia). As I discussed above, generic statins, ACE inhibitors, beta-blockers, and aspirin used in patients with coronary heart disease (CHD) save hundreds of thousands of lives yearly worldwide. Moreover, these drugs, when used optimally in patients with stable CHD, are as effective as invasive surgical procedures (e.g., coronary artery stenting) in most patients (Boden et al. 2007). Great progress against fatal heart disease (64 percent decline since 1950) and fatal stroke (74 percent decline since 1950) has been made in the face of increasing obesity and diabetes mellitus—two problems that exacerbate CHD and stroke (Kolata 2009). The drugs in table 3 and old drugs like beta-blockers and aspirin have made these tremendous advances possible.

The vaccines in table 3 basically eliminate the diseases (primary prevention) at which they are aimed. The harm done by hepatitis B alone—in the hundreds of millions—is now in principle eliminable with universal vaccination (Offit 2008). Hepatitis B is often a dreadful clinical problem and, as noted above, can lead to liver cancer (Offit 2008).

However, the failed war on cancer (Kolata 2009) and the lack of progress against Alzheimer's and Parkinson's diseases and many other chronic disabling diseases, unlike the tremendous progress made against heart disease and stroke, are very discouraging.

I would note that the drugs and vaccines in table 4, although not ideal, are also very useful; the risk/benefit ratio is clearly in the patient's favor.

We should encourage the discovery and development of drugs and vaccines like those in table 3—especially against unsolved medical problems like cancer and Alzheimer's and Parkinson's diseases. Equally important, we should bridle or stop the abuses in table 1 and demand honest advertising of the drugs in table 5 (i.e., quantitative differences from placebo and comparative efficacy results). The abuses in table 1 could be eliminated by the combined and concerted efforts of the FDA, Securities and Exchange Commission, universities, journals, and medical societies. The FDA should also allow easier access to unpublished negative studies, as has been done with antidepressants (SSRI), allowing their "true efficacy" to be calculated (Mayer 2008).

Finally, the old saw that efficacy data must be clinically important and not just statistically significant (Spector and Vesell 2006a; Spector 2009) must never be forgotten. Unbiased and objective experts, beholden to the public good, should discourage the pharmaceutical industry from marketing drugs that are statistically better than placebo but have no clinically meaningful efficacy. The FDA does not do this; they approve drugs but do not generally make comparative judgments.

In summary, over the past thirty years the pharmaceutical industry has made tremendous progress leading to greatly improved health and longer life spans with a substantial and correct focus on primary and secondary prevention, not just treatment, notwithstanding its failures (e.g., against cancer, Alzheimer's and Parkinson's diseases). In my view the future is bright with the steady march of new scientific progress. The problems in table 1 need work, but the solutions are obvious and *should* be relatively easily corrected. □

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Thinking Critically about Computer Security Trade-offs

Good security decisions require making intelligent trade-offs, but far too often we settle for poorly justified security measures based on fear and ignorance rather than reasoned risk analysis.

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You can readily find computer and network security courses in most computer science departments, but it may be overly ambitious to call computer security a science. The profession certainly has aspects of an art, and it is fair to call much of the work engineering, but it lacks the rigor and objectivity of a science when put into practice. We highly desire security metrics to objectively measure the effectiveness of security technologies and to give the field this extra rigor, but they are difficult to come by. In fact, developing objective security metrics is considered one of the grand challenges of the field (INFOSEC Research Council 2005).

Part of the problem is the difficulty of quantifying risk in this field. Often, qualitative analysis is given with what are

arguably somewhat arbitrary mappings to quantitative values (Schneier and Ranum 2008). It is even harder to calculate the return on investment that managers need in order to make decisions about how to mitigate a risk. How much value do you give to your reputation, and how do you estimate the cost of loss of reputation due to a kind of cyber attack that has never occurred before? Also, we have too little data on how often various industries suffer from different types of intrusions. Until recent laws were passed, companies would conceal most instances of attack even from law enforcement if they could (Schneier 2006). These factors make it hard to make rational decisions about how to address the different threats from cyber attackers.

If the computer security industry had a good handle on these problems, you would expect to see the major insurance companies offering policies that allow one to transfer these risks. This is what we see with automobile safety, natural disasters, and physical theft. If there were a way to reliably calculate these risks, the insurance companies would create standards of practice for cyber security and commonly sell insurance to cover losses due to such threats, as they have done for other industries. However, it is very difficult to calculate the likelihood of an attack in such a rapidly changing landscape and even harder to estimate the true cost of such an incident. Therefore, cyber security insurance is just now beginning to appear—though not from major players—and is far from common practice.

Fear, Uncertainty, and Doubt

Without solid risk analysis, FUD (fear, uncertainty, and doubt) often fills its place when justifying a particular security countermeasure. It is easier and often more effective to raise fear in people's minds than to argue with them that they need to spend time or money on some security mechanism. This has presented enough of a problem that the statement of ethics for the major information security certification, the CISSP, specifically states that security professionals should avoid raising unnecessary FUD ([ISC]2 2008).

Raising fear, uncertainty, and doubt is not unique to computer security professionals. It is used by governments to justify exercising extraordinary powers (Electronic Frontier Foundation 2003), especially in times of crisis. It is used by agencies within the government to grab power (Shachtman 2008; Poulsen 2009), and it has been used to bring funding to pet projects (Meserve 2007). Vendors of security products also use FUD to sell their tools. This kind of FUD often comes in the form of scary and misleading statistics (Winder 2007).

In addition to not effectively informing people how to spend resources on security, FUD is dangerous for another reason. Its overuse makes people numb to real, but less dramatic, threats. This constant "crying wolf" can be dangerous because it can lead to inaction when a large, serious threat must be dealt with quickly in the future.

*In*security at the Airport

Bruce Schneier coined the very apt term *security theater* (Schneier 2003). Once exposed to the concept, one sees it everywhere. Security theater is security done just for show or just to make people feel better. It is the placebo of the field. A great example can be seen in the public safety films shown to schoolchildren during the Cold War era. These films showed children hiding under their desks for atomic bomb drills. There could hardly be a less effective countermeasure, but that wasn't the point. The point was to empower people so they felt like they could do something.

A more modern example of security theater costs us time at the airport and presumably man-hours for Transportation Security Administration agents and information technology staff. It is the "No-Fly" list. The goal of this list is to keep "bad" people off of planes, or at least people with names similar to those of "bad" people (Goo 2004; Moore 2007). It works by checking the name against a database containing the blacklisted non-flyers when tickets are purchased. The problem is that checks at the airport are very easy to bypass even if the list is accurate and specific—a precarious assumption (Bowers 2005).

The War on Photography

One interesting case is what has been called the "War on Photography" (Schneier 2008b). In recent years, people have been arrested, had their cameras confiscated, and been hassled by law enforcement for photographing particular targets (Davis 2007a, 2007b). Examples include photographing an ATM, police, and even tourist landmarks (Becker 2009; Davis 2007b; Fisher 2005; Shattuck 2008; Electronic Frontier Foundation 2003). There often isn't legislation to indicate what is illegal to photograph, and it is often instigated by reports from overzealous citizens or police who do not like to be photographed.

The main problem with this approach is that while police may catch a terrorist photographing something, there are far more tourists taking pictures of landmarks and curious people with cell phones taking pictures of things they don't frequently see—like an open ATM machine. This is simply because there are so few terrorists compared to non-terrorists. The signal to noise ratio of this approach is too high to be useful or efficient.

Furthermore, in this case there is likely nothing that can be done if law enforcement finds a terrorist taking pictures, as that alone is merely circumstantial evidence of terrorist activities. Usually, people are not taking pictures of anything illegally unless they are trespassing—in which case there are established laws to handle the situation. Add to this the decrease in police accountability if citizens are not allowed to photograph or record officers, and the trade-offs do not look so good. We likely harass and infringe upon the liberties of far more innocents for every terrorist encountered. And even then, confis-

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cating the camera would not get the terrorist off the street or stop him from having a comrade take the photo later or from using Google Street View®. To be useful, the false positive rate would have to be much, much smaller.

Back to Cyber Security

A common theme among these examples is that security is a trade-off. Even for effective measures, there are costs—if only of convenience and time. If we are not just propping up security theater as a substitute for real security, we are usually making a trade-off between usability and security. Furthermore, security is not all or nothing. Nothing is ever 100 percent secure, and therefore security comes down to using the best information available to balance costs versus benefits.

Let's look at desktop computer antivirus technology. Everyone should run antivirus software on his or her computers, right? The landscape was very different in the late 1980s and early 1990s when signature-based virus detection was created: there were few viruses, they used known and old exploits, and they spread slowly. Most often, the viruses spread by floppy disk and not over networks because most home PCs were not connected (Bloor 2006).

Windows Security Alert
To help protect your computer, Windows Firewall has blocked some features of this program.
Do you want to keep blocking this program?
Name: VCAS
Publisher: Unknown
Keep Blocking
Unblock
Ask Me Later
Windows Firewall has blocked this program from accepting connections from the Internet or a network. If you recognize the program or trust the publisher, you can unblock it. When should I unblock a program?
Figure 1. Windows Firewall alert

Much of this has changed now. First, viruses are often polymorphic or use encryption techniques to thwart signature-based detection, which fails at detecting as much as 80 percent of new malware (Tung 2008; Kotadia 2006). These techniques of obfuscation create one virus with a million different perfect disguises, which makes it difficult for any signature-based technique to match a virus. There is what we call "zero day exploits," unknown vulnerabilities used by the malware writers to spread their code quickly across the Internet before a signature can even be created and distributed. Finally, the signature databases have become huge—with millions of signatures—and they are growing exponentially (Leydon 2008). This uses significant resources on all but the newest PCs. For a long time the exponential growth in computational power kept antivirus technology in pace with the exponential growth of the number of viruses, but that has begun to level off (Dauger 2007). Signature-based antivirus is simply an untenable approach to handle malware on computers today.

Lest it be said that I am arguing against a straw man, I recognize that antivirus software has begun to try more behavioral-based approaches to look for misbehaving software. Unfortunately, this technology is still immature and often burdens users with cryptic messages. The fact is that even fully patched machines with the latest antivirus updates can still be infected. It appears that the "good guys" are currently the losers in this arms race until better techniques than the blacklisting approach of handling malware are developed. In fact, it may even make sense to consider white lists of allowable programs since there are more pieces of software people do not want running than those they do (Tung 2008).

The point is not to say "do not run antivirus on desktop PCs" but that enough has changed that one must really analyze the costs and benefits. Since keeping a machine patched and practicing good behaviors is so much more effective at preventing infection, and because signature-based antivirus software consumes a significant percentage of a computer's resources, I lean toward not running it. The tipping point was when it became so easy to restore a machine to a previous clean state with the advent of virtual machines. This allows you to freeze the exact state of a machine, do something that may risk infection of your computer, and revert back to that clean state afterwards and know that your machine is not infected.

Firewalls

Another thing people are told they must have is a firewall, even if they don't know what it is or how to properly configure it. Furthermore, there is a good chance that their Internet Service Provider (ISP) or office network already employs one. Host-based firewalls—ones that run on your local machine—can be great if you understand the messages. They will alert anytime a new piece of software wants to connect to the network, something almost all modern malware does.

Unfortunately, the average user does not know what programs should and should not run on their systems. For example, many users would see a message such as the one in figure 1 and not know what to do with it. In this case, it is necessary to allow a service pack to be downloaded, but how is the user supposed to know that? Furthermore, even if the alert says the name of the software is "iTunes," the creator of the malware can call it anything he or she wants. This often makes host-based firewalls very unusable, and users tend to just allow everything, effectively negating the benefit a firewall could bring.

So it comes back to trade-offs. Here we can potentially get more protection, but at the cost of usability if users unwittingly block necessary software. If they allow everything, they get no additional protection.

Password Mythology

One of the most common security mantras is to never write down one's password. Is this good advice? It depends upon who we are concerned might misuse the password. Writing down a password will not make it more or less likely for an online adversary to compromise the account. However, putting a password

on a Post-it® note underneath your keyboard at your office makes you vulnerable to the threat of a nosy coworker. What if you put passwords on a Post-it® in your wallet? Presumably, you already put sensitive information such as credit cards in your wallet. You have to think realistically about the threats you are exposing yourself to and weigh the trade-offs.

In this case, there can be some very bad trade-offs, especially if not writing down passwords forces you to use simpler passwords or reuse them for multiple accounts. It is hard enough to remember a few good passwords, let alone dozens. Simple passwords can be easily cracked by computer software using variations of what are called dictionary attacks (Null 2007). A dictionary attack is an unsophisticated but effective attack that simply tries millions of combinations of words from some dictionary in an increasing order of likelihood as the password in question. Because people do not use truly random passwords, these attacks are very effective. Poor security practices at another site can expose that password, letting the attacker try it for accounts in other domains. This is a problem we frequently face in the supercomputing community (Nixon 2006), where passwords are harvested at one site and reused at a collaborating site to get a foothold on new systems. This is often out of the user's control, too. Password reuse allows a small breach to more easily become a large one.

The best defense against these problems is to use many distinct, random passwords. Because of the limitations of human memory, this usually requires writing some of them down or using one of the many great password management tools,[1] which encrypt your passwords with one strong password and even allow you to carry them with you on a USB flash drive. However, this goes against the often-recited warning about writing down passwords.

Web Site Security

You will often see advertisements on Web sites, especially if they are selling something, that they are "hacker proof" or use "128 bit encryption." Ignoring the fact that not all 128 bit ciphers are equal (Vaudenay and Vuagnoux 2007), anyone can set up a Web site that uses encryption. If they are willing to spend a couple hundred dollars, they can even get a certificate so that the visitors' Web browsers will show a nice little lock icon "proving" their connection is secure.

Few people, however, really know what that lock icon means. You should ask, "Who am I trusting and to say what?" In this case, you are trusting that a certificate authority, like Xramp Global Certification, has done some sort of check that the owner of the domain (e.g., example.com if you are visiting www.example.com) is the one running that Web site. Furthermore, you are trusting that your Web browser is correctly communicating with this Web site in a way that prevents others from eavesdropping on the conversation between your Web browser software and the Web server. While there may be reasonable doubts about whether this is good (e.g., "Who is Xramp Global Certification, and why should I trust them?"), this in itself is not so bad. The problem is that the lock icon does not assert what people often assume it does.

Several questions remain unanswered even if you have a "secure connection" to a Web site and see that nice lock icon. For example, how are the data handled on the retailer's network after the Web server processes it? Is the credit card information stored on these systems and, if so, is it encrypted and protected adequately? How does the business handle its backup tapes that contain the consumer's data, and how does it prevent theft or loss? With whom do they share the consumer's data and for what purposes? All of these things could be answered in various ways regardless of whether or not that one communication channel between the Web browser and the retailer's Web server is secure.

The problem is that people must still trust the retailer to implement good security measures. This is probably not a terrible step to take if you are visiting Wal-Mart's Web site or Amazon.com. However, it is likely to be of little help if you want to do business with the owners of cheapjunk.biz.[2] The security that comes with that little lock icon proves to be necessary but hardly sufficient for a secure online transaction.

Why Do We Make Bad Trade-offs?

It is clear that we often make poor security trade-offs, but the question is: why? While this is outside the main point of this article, I present some of the more popular hypotheses. Bruce Schneier, a leading applied cryptography researcher, brings up a point I find particularly suited to explain much of our inability for reasoned risk analysis (Schneier 2008). There is a mental mechanism psychologists call the "availability heuristic," which states: "We assess the frequency of a class or the probability of an event by the ease with which instances or occurrences can be brought to mind." A corollary of this is that we are swayed more by vivid, personal experience than statistics. It certainly makes sense that we would evolve such a heuristic and that it would work well with the simpler risk analysis faced by hunter-gatherers tens of thousands of years ago. Further, it is just as easy to see how it falls apart in the modern world of twenty-four-hour news channels. Coverage and over-coverage of rare events naturally increases the ease with which a rare occurrence can be brought to mind, thus skewing our perceptions of the probability of specific events.

Another problem faced by politicians, security officers, and anyone who makes decisions about what security mechanisms to implement is that no one wants to be a scapegoat. This leads to a lot of CYA (cover your ass) security, as it is called in the trade. A government official could reasonably say that he believes a lot of people are on the No-Fly list wrongly but probably not want to be the one to take a person off the list. The fallout if someone taken off the list later hijacks a plane is something you would not risk, even if it were a low-probability event. In fact, it is so hard to get a name off of the No-Fly list that it took three weeks to remove the late Senator Edward M. Kennedy (Goo 2004).

Furthermore, fear, uncertainty, and doubt taps into deep emotions, especially when the protection of children is involved. We will make all sorts of silly and even dangerous arguments when we think children may be threatened (Lemos

2007). With such an effective motivator to get a security mechanism implemented, few wish to take the much harder route of reason and analysis, especially when they often cannot assign hard quantitative numbers to the risk.

Conclusion

In a field wrought with fear, uncertainty, doubt, and poorly justified solutions, a consumer or citizen should ask many questions. Be skeptical if promised 100 percent security or hacker-proof services. Be skeptical if promotional materials for a product are primarily based on FUD. Be skeptical if presented an all-or-nothing choice—a false dichotomy. In that case, ask several questions. Are there hidden or non-monetary costs to this security measure? Is this just something to make us feel safer? What are all the trade-offs? Are they reasonable? Here, we must balance the competing needs of security and usability, letting neither our fear nor desire for convenience win. Does this security precaution still make sense in today's landscape, or are we just doing it out of habit? Are we just doing this because everyone else does or says it is necessary? Who are all the parties being trusted, and what are they actually being trusted to do?

Many of these are the same sorts of questions skeptics ask of any claim. Similarly, security is not the only realm that touches on deep needs and emotions that cloud critical thinking. In that sense, it is no different from any other field. However, it is a challenging place to apply critical thought—one where it is far too commonly not applied at all. □

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Notes

1. http://passwordsafe.sourceforge.net/.

2. Cheapjunk.biz did not exist at the time this article was written. It proved exceptionally difficult to find a name on that theme that was not already registered.

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Blindsided by a Culture of Disinformation

The public is being blindsided by disinformation that threatens the foundations of our society and causes debate on policy matters to become dysfunctional and skewed to favor special interests.

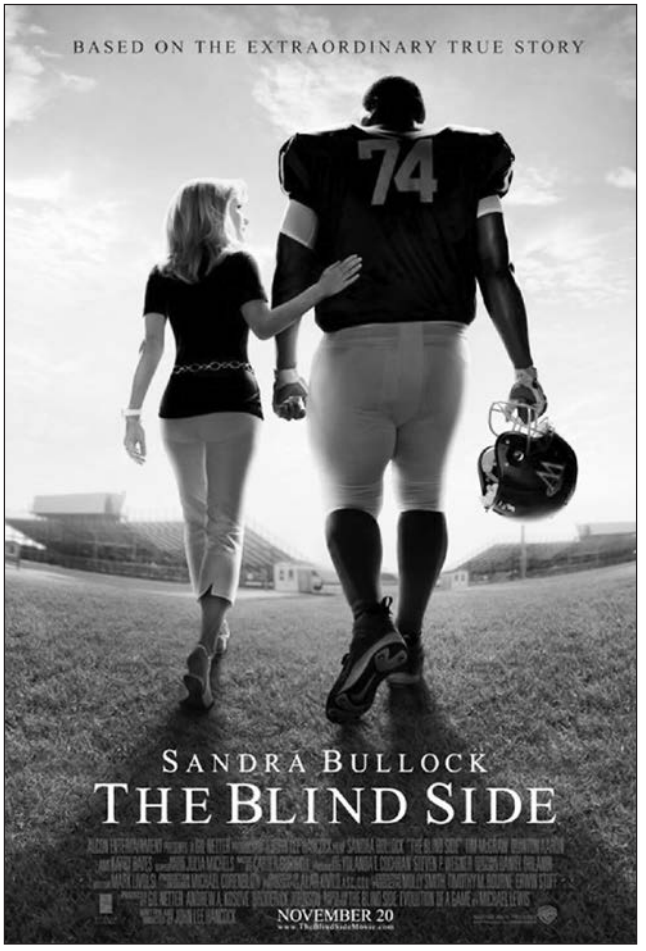
ALAN J. SCOTT

It is easy to get choked up and tearful while watching the movie *The Blind Side*, starring Sandra Bullock. One's emotions come to the surface while cheering for Michael Oher, who is trying to break free of his crime-ridden roots, and the all-American family who, through an extreme act of altruism, took him in and made him part of the family. But wait: our culture likes to toy with our emotions and understandings in nefarious ways.

The real Michael Oher revealed in an interview that he never had to be taught how to play football as depicted in the movie (ABC News 2009). A central point of the movie was the Truohy family deciding to pick up and provide shelter to a homeless boy walking in the rain. But this also twists

the facts to further audience appeal. According to my investigations, the proper context is that the coaches realized Michael's athletic potential and knew he had no home, so they arranged to have Michael stay with various families in the school district on a rotating basis. Then, the Truohys decided to curtail the rotation and keep him.

This movie is currently promoted as "based on the extraordinary true story" (Warner Brothers 2010). But a more accurate description should read, "The story is loosely connected with Michael Oher but fictionalized to promote a more comforting sense of goodness in the world."



One wonders if a less-athletically-gifted African American who performed poorly in school and had a crack-addicted mother would be shown the same open doors. *Blindsided* is the descriptor of our times.

In June 2008, people began asking about the health dangers of using cell phones because of a YouTube video that went viral and was viewed by millions in a few days (Wartham 2008). This video showed the electromagnetic radiation of three near-

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by cell phones popping corn kernels. Investigations revealed that the video was produced as part of a stealth marketing program by Cardo Systems, Inc., which manufactures Bluetooth headsets (Snopes.com 2009; for more on this see the September/October 2009 issue of SI). These headsets are often bought and used when people are fearful of cell phone radiation. The public is blindsided by corporate interests and a perverse disregard for objective reality. (It should be noted that there exists no significant link between adverse health effects and exposure to electromagnetic fields from power lines or electrical appliances, including cell phones [APS 2005].)

A conference on global climate change in Copenhagen concluded in December 2009. Preceeding this conference, computer hackers illegally retrieved and released private communications between climate scientists in England. These e-mails painted climate scientists as conspiring to twist the facts. Their release planted doubt about the reality of climate change and the need to address it. Physicist Robert Park thinks this affair smells of ExxonMobil or Peabody Coal hiring cybergoons with the specific goal of derailing efforts to regulate or penalize greenhouse gas emitters (Park 2009). In fact, a blue-ribbon panel of scientists reviewed the evidence for "Climategate" and in late March issued a report finding no evidence of faked data.

Still, the affair seems to have blindsided the public. Surveys indicate that people are increasingly skeptical of climate change problems and that about half of Americans believe there is "significant disagreement within the scientific community" when it comes to measuring and interpreting climate change (FactCheck .org 2009; Orr 2009).

Let's make one thing clear: regardless of these e-mails, there is strong scientific consensus on human-caused global warming, and the need for action is indisputable. I simply refer you to the official statements on climate change made by the 46,000 physicists in the American Physical Society (APS 2007) and the hundreds of thousands of scientists belonging to the American Association for the Advancement of Science (AAAS 2009). Alan Leshner, chief executive officer of the AAAS, states, "The vast preponderance of evidence, based on years of research conducted by a wide array of different investigators at many institutions, clearly indicates that global climate change is real, it is caused largely by human activities, and the need to take action is urgent" (AAAS 2009).

Demanding action to address climate change shouldn't be construed as a political rant without merit, but too often it is. So part of the solution in dealing with disinformation is to reduce the psychological impulse to pigeon-hole facts as partisan rhetoric and simply dismiss what is contrary to one's political leanings. Most disinformation thrives on the confirmation bias of human perception.

Political demagogues can often be identified by their refusal to concede any degree of validity to their opponents' arguments. Consider the case of arsenic in drinking water. In the last few days of Bill Clinton's presidency, Clinton lowered the maximum permissible concentration of arsenic from 50 parts per billion (ppb) to 10 ppb (Sorvalis 2002). When former President George W. Bush took office, Bush withdrew the new

standard to keep it at 50 ppb. Arsenic is an extremely toxic carcinogen that can cause bladder cancer.

Most liberals react to such information as an obvious pandering to industry at the cost of human health. But if lowering the arsenic concentrations from 50 ppb to 10 ppb costs a city of 20,000 citizens about, let's say, $4 billion, the costs are unmanageably high. Any serious debate on this issue must identify how much it costs to reduce one statistical cancer and how much society is willing to pay for this reduction. Most pollution issues involve such trade-offs.

In efforts to influence elections and further blindside the public, a group called Minnesota Majority aired commercials in November 2009 proclaiming that two million jobs would be lost by curbing greenhouse emissions; 31,000 scientists believe that the climate change concern is a hoax; and only fifty climate scientists at the United Nations think otherwise. The group is a conservative political action organization with strong religious affirmations (Minnesota 2009). Their ideology or agenda must be buttressed by falsehoods to survive. They also opposed President Obama's health care reform efforts.

Congresswoman Michelle Bachmann from the 6th District of Minnesota joined with the Family Research Council (a conservative political action committee) to pray, via a live Web cast, for the defeat of Obama's health care reform efforts (Helgeson 2009). This creates problems on multiple levels. Prayers don't easily lend themselves to debate, dissent, or skepticism. Lawmakers need to carefully investigate information and consider the real possibility of special interests generating disinformation. Then, they need to critically reason an appropriate course of action and build a consensus for this action. With many prayers, a cult-like psychology begins to strangle this process; false moral certitude creates intransigent stances and paints opponents as simply evil. These are complex matters that require a comprehensive weighing of the pros and cons of a (now passed) health care proposal that was over 1,000 pages long.

As you can surmise, there was pervasive blindsiding of the public regarding health care reform. It was disheartening to hear people yell about such nonsense as "death panels" and the "need to keep government out of Medicare." Physicist Lawrence Krauss recently wrote a piece in *Scientific American* in which he wonders whether science can fight media disinformation. "The increasingly blatant nature of nonsense uttered with impunity in public discourse is chilling," he said (Krauss 2009). Science is undeniably important in forming public policy. It is estimated that 50 percent of all legislation in the U.S. government has some aspects of science to it (NPR 2002).

This epidemic of misinformation started with the term "health care reform." Health insurance reform, not health care reform, was at the heart of the congressional legislation that, after a bitter battle, was passed, signed by President Obama, and is now law. Strong voices opposed, and still oppose, health care reform, declaring it will "remove choices," the "government decides care, you don't," it will leave you with "no choices," and it will allow "government control over private plans." I found these statements throughout a chain e-mail and in a YouTube video that was viewed over 250,000 times (YouTube 2009) But if the government supplied a public option, it would mean more choice, not fewer choices—provided the government did not subsidize the public option, causing private plans to be undercut. Besides, FactCheck.org analyzed claims made in the aforementioned chain e-mail about health care reform. Out of forty-eight assertions, they found twenty-six to be false, eighteen to be misleading, and only four to be accurate (FactCheck.org 2009b).

Politicians and special interest groups regularly deceive the public with what they call "spin"—a euphemism used to soften and whitewash unethical actions. At the heart of these malicious efforts is irreverence for objective reality and indifference to consumer advocacy. For instance, consider the $2.3 billion penalty paid by Pfizer pharmaceuticals in 2009 for unlawful prescription drug marketing. The corporation spins information about its products with the purpose of influencing doctors to write more off-label prescriptions for its products. In the past decade, more than $11 billion in fines have been levied against the pharmaceutical industry by federal prosecutors (MSNBC 2009).

"[Spin] flies at us in the form of misleading commercials for products and political candidates and about public policy matters. It comes from businesses, political leaders, lobbying groups, and political parties. Millions are deceived every day, buying products, voting for candidates, supporting policies and even wars."
—Kathleen Jamieson and Brooks Jackson, *Un-Spun*

Kathleen Jamieson, director of the Annenberg Public Policy Center at the University of Pennsylvania, believes strongly that special interests have reframed many debates on public policy. In the health care debate, she insists that calling the issue health care reform when it should be called health insurance reform conjures up wrong associations in the public's mind (Jamieson 2009). In *Un-Spun: Finding Facts in a World of Disinformation*, Jamieson and coauthor Brooks Jackson write, "[Spin] flies at us in the form of misleading commercials for products and political candidates and about public policy matters. It comes from businesses, political leaders, lobbying groups, and political parties. Millions are deceived every day, buying products, voting for candidates, supporting policies and even wars" (Jackson 2007). Reframing the debate by barraging the public with disinformation is a strong tool used to blindside the public.

The Federal Trade Commission (FTC) has been busy ferret-

ing out anticompetitive practices in the health field. It researched and challenged pharmaceutical companies' "pay-for-delay" practices in which drug companies pay generic drug manufacturers to delay the release of inexpensive generics. This is a hidden practice that blindsides the public out of, possibly, billions of dollars per year, according to the FTC (FTC 2009). The FTC also challenged three physicians' associations that attempted to price-fix health care services in a particular geographical area by limiting competition and requiring payers to negotiate with one association of physicians (FTC 2009). Green or eco-friendly product labeling has become the latest front on which the FTC is concerned about marketing deception.

U.S. health care costs twice as much per person as health care in Canada (Maceda 2010), which has universal coverage and a single-payer system. If health care in the U.S. was twice as good as that in Canada, one could conclude that the systems are of equal value. All-in-all, close examinations support the systems being roughly equivalent in quality of care (FactCheck.org 2009c). There are some drawbacks in Canada, such as longer waits for elective procedures.

Health insurance companies in the U.S. account for only 4 percent of the total health care costs. The lion's share of costs are hospitals with 31 percent, physicians with 21 percent, and pharmaceutical companies with 10 percent (Karl 2010). So fixating on insurance alone over-simplifies the situation.

However, the disinformation machinery would contend that Canada has socialized medicine and prevents people from choosing their own doctor. In Canada, people have free choice of their physician (Rachlis 2009). The U.S., on the other hand, forces people to choose a doctor within their insurance plan. And yes, the private health insurance industry in the U.S. would fight tooth and nail to prevent a single-payer system from being enacted, because it would put them out of business.

Missing from almost all discussions in the popular media is a detailed identification of the disparities in cost between the U.S. and Canadian systems. Arnold Milstein and Helen Darling, from the U.S. National Academies, identified five different areas in the U.S. health care system that would contribute to the cost disparities. These were: (1) providing services that are unlikely to improve health, (2) using inefficient methods to deliver useful services, (3) charging non-competitive prices for services and products, (4) incurring excess administrative costs in the health care and insurance system, and (5) missing opportunities to lower net spending via illness and injury prevention (Milstein 2010).

Health insurance companies in the U.S. account for only 4 percent of the total health care costs. The lion's share of costs are hospitals with 31 percent, physicians with 21 percent, and pharmaceutical companies with 10 percent (Karl 2010). So fixating on insurance alone over-simplifies the situation. The aforementioned sources of cost disparities apply to all of these end-channels of money flow and their interactions. It is clear from the data that Canada spends much less per person on such things as hospital stays, doctor's office visits, and prescription drugs (Feeny 2009). Part of this disparity is influenced by medical malpractice liability costs in the United States.

Surprisingly, the U.S. already publicly funds about 50 percent of all health care expenses through Medicare and Medicaid. All forms of efficient health care will be rationed care in some sense. Suppose two patients arrive at the emergency room at the same time—one bleeding profusely from an auto accident and the other showing symptoms of a cold virus. It is only reasonable to ration the care so that the auto accident victim gets priority attention and the other patient has to wait. Of course, one could hire more emergency room physicians, but this is inefficient if more are not needed most of the time.

In addition, experts on comparing U.S. and Canadian health care have argued that Canada rations on *need* while the U.S. rations on *income* (Feeny 2009). You be the judge of which is better.

The congressional debate rose to comedic proportions when statements submitted to the Congressional Record by more than a dozen different lawmakers were found to be identical (Pear 2009). The source of this duplication was traced to lobbyists working for a large biotechnology company called Genentech. The lobbyists drafted one statement for Democrats and another for Republicans. There are six health care lobbyists for every member of congress (Attkisson 2009).

Efforts to blindside the public can run deep in corporate America. David Michaels argues that corporations often hire "product-defense" consultant firms to create studies or research for the purpose of safe-guarding profits (Michaels 2005). It is no accident that America's Health Insurance Plans (AHIP)—an organization of 1,300 member health insurance companies—released a report and ran commercials at just the time reforms were being debated. Obama called the actions of the health insurance industry "deceptive and dishonest" (Baker 2009). In big letters, AHIP's Web site disingenuously declares that it favors bipartisan health care reforms.

Disinformation in product marketing often blindsides the public. In September 2009, General Motors announced that the new Chevy Volt gets 230 miles per gallon of gasoline (Veldes-Dapena 2009). But this is absolutely false and conflates energy retrieved from just using gasoline compared to energy retrieved from combinations of charging batteries from the electric grid, burning gasoline, and driving only a certain distance.

On General Motors' Web page, you'll find the following statement: "Volt is an electric car that can create its own electricity. Plug it in, let it charge overnight, and it's ready to run on a pure electric charge for up to 40 miles—gas and emissions free" (General 2010). Energy is never *created*. It is simply transformed from one form of energy to another. And charging the batteries on the electric grid is only emissions free if the electricity was produced by sources such as wind or hydroelectric power.

The American Coalition for Ethanol declares that ethanol "is a clean-burning, high-octane motor fuel that is produced from renewable sources" (American 2010). But based upon the best farming and manufacturing practices available today for corn-based ethanol, the American Institute for Biological Sciences indicates that for every one unit of ethanol energy produced, 0.9 units of energy is needed (Wald 2007). A better perspective is that corn-based ethanol is only 10 percent renewable—at best. The public is commonly blindsided by disinformation about energy. In 2005, President George W. Bush called hydrogen an energy resource, which it is not. Hydrogen, combined with hydrogen fuel cell technology, is an energy storage mechanism.

The Union of Concerned Scientists reported that ExxonMobil spent $16 million from 1998 to 2005 to "manufacture uncertainty" about global warming where none exists. It is a strategy of disinformation, similar to the one used by tobacco companies, that includes creating forty-three front organizations to blindside the public (UCS 2007).

When applied human behavior analysis and deceptive marketing merge with big money, the result is a reframing of policy issues that forces upon the public a dysfunctional discourse based upon disinformation. This, in turn, skews the debate to favor big money and erodes our democracy. "Our Founders could never have imagined that the marketplace of ideas would change so profoundly that the 'consent of the governed'—the very source of legitimate political power in a democracy—could become a commodity," Al Gore has said (Gore 2007).

The public's ability to prevent being blindsided during elections was further eroded by a recent U.S. Supreme Court decision (*Citizens United v. Federal Election Commission*) in January 2010 (Liptak 2010). The court decided to allow corporations and unions to spend an unlimited amount of money (i.e., soft money) in media advertising to promote positions that ultimately favor the corporation or the candidate most likely to help the corporation. Senator Russ Feingold considers this ruling another notch in the belt of corporations that blindside the American people (Feingold 2010). Luckily, the Court still upheld legislation that requires advertisements to identify their funding source.

Now, when one looks at the spending of each political campaign, it will mean little if it doesn't also include the amount of spending by corporations on issue advertisements that affect political races. This information is important but not easily accessible for the average citizen. This is particularly true when special interest groups use front organizations to obfuscate the money flow. In his dissenting opinion, Justice John Stevens stated, "Our lawmakers have a compelling constitutional basis, if not also a democratic duty, to take measures designed to guard against the potentially deleterious effects of corporate spending in local and national races" (U.S. Supreme Court 2010).

Objectively viewed, this issue is not clear-cut because it involves weighing trade-offs and interpreting the Constitution. Do the free speech rights of corporations exceed the right of Congress to limit and regulate corporate *electioneering*? Based on the recent Supreme Court decision, the answer is yes.

The blindsiding of the public gets more complicated when corporations decide to influence judicial positions. Many judicial positions are chosen by popular vote, which requires candidates to campaign, as with the Wisconsin Supreme Court. But the average citizen doesn't have the wherewithal to properly evaluate judges, and listening to a thirty-second TV commercial cannot change this situation. In fact, it makes the system ripe for abuse.

The Texas Supreme Court and Texas Bar Association performed a study and found that 83 percent of the public thinks that judges are influenced by campaign contributions; 79 percent of the lawyers polled believe that campaign contributions significantly influence judges, and half of the judges on the Texas Supreme Court think the same way (Moyers 2010). There are ways to fill judicial positions based on merit, not popular voting.

One of the biggest disinformation campaigns currently being waged is in the arena of financial market regulations and public policy. At StoptheCFPA.com you'll find a sophisticated video put forth by the U.S. Chamber of Commerce to stop legislation that would form a Consumer Financial Protection Agency (CFPA) (U.S. Chamber 2010). This video argues that it will be harder for small businesses to access credit if the CFPA is formed. But Gretchen Morgenson, a *New York Times* journalist who closely follows the financial markets, declares the video a big ruse (Moyers 2010b). It takes two disconnected concerns—formation of CFPA and the inability for small businesses to access credit—and melds them into a false causal relationship.

The financial, insurance, and real estate sector has given more financial contributions to lobbying efforts than any other sector. In 2008, Barack Obama secured $40 million in contributions from this sector (Mayer 2009).

The last big blindsiding of the public is truly bipartisan; it is the blindsiding of the *future public*. Lawmakers can't stomach balancing the budget on current citizens, so it gets lumped onto future generations by increasing our astronomical debt. But this ineptitude is driven by voters wanting more services with less tax. Thus, it blindsides the next generation.

Many believe that our tax returns should include a surtax for waging our wars, which would amount to about $1,500 for every household every year. This war surtax is supported by several representatives in Congress (U.S. House 2009). More than 225 years ago, Thomas Jefferson stated, "The principle of spending money to be paid by posterity . . . is but swindling futurity on a large scale" (CBS 2009). A recent article in the *Wisconsin State Journal* reported that the federal Recovery Act put $2 billion into the pockets of Wisconsin citizens, or about $369 per person (Defour 2010). It omits the obvious logic and

insanity that the money may have originally come from Wisconsin citizens or, perhaps more accurately, from future citizens by ballooning the debt.

It is easy to become cynical and reject any information that does not conform to our brain's immutable worldview. But this state of mind is unconstructive and dogmatic. People need to be skeptical, not cynical. Skepticism indicates a willingness to believe so long as evidence from reputable sources, together with sound reasoning, supports claims. People need to ask why and keep asking why until the source is reached and recognized as reasonably reliable and accurate. This may involve actively researching the topic through nonpartisan, unbiased sources such as FactCheck.org, Union of Concerned Scientists, or the SKEPTICAL INQUIRER.

In the broadest sense, people must resolve to live sustainably and justly. This means meeting our current needs without compromising the ability of future generations to meet their needs. It also means working for social and economic justice, which compels us to resist deficit spending. Some people will counter this argument with intellectually bankrupt reasoning such as "Deficit spending is OK provided the economy continues to grow and it is only a small percentage of our GDP." These arguments are an institutionalized economic/environmental pyramid scheme waiting to come unraveled.

Furthermore, living justly includes knocking down policies that help disinformation misguide good people trying to act ethically. It also means recognizing our own fallibility. The public mustn't continue to support, in principle, policies to address climate change while, at the same time, strenuously objecting to every specific sacrifice needed to implement such policies. Corporations must embrace the ethos of the triple bottom line—people, planet, and profits.

World citizens must resist and counter disinformation that, experience suggests, gets disseminated (sometimes manufactured) by those entities willing to trade long-term ecological or geopolitical health for short-term profits or unjust practices. The world needs more advocates for disinterested truth. □

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Historical Whodunit

Spiritualists, Poe, and the Real 'Marie Rogêt'

Myths, mystery, and misinformation about a young woman's death.

JOE NICKELL

On a warm midsummer Sunday in 1841, an attractive young lady left her home on Nassau Street in New York City. As she closed the door behind her, she could not have known that she was stepping into history. The following Wednesday two men walking on the New Jersey side of the Hudson River saw a body floating two or three hundred yards out, and they procured a boat to bring it to shore.

Thus began the enigma of Mary Rogers's death and attempts to solve it by police detectives, newspaper editors, spiritualists, anti-abortionists, and theorists of many other stripes. Edgar Allan Poe would soon fictionalize the case for

his French sleuth C. August Dupin as "The Mystery of Marie Rogêt" (Poe 1842–43). Poe gave Mary a kind of immortality, and she became the subject of countless articles, plays, and books, as well as an entry in *The Encyclopedia of Unsolved Mysteries* (Wilson 1988).

Background

At the time of her death, Mary Cecilia Rogers was a very pretty, tall, black-haired twenty-year-old living with her mother and assisting her in running a boardinghouse. She previously worked at a tobacconist's shop owned by John Anderson. Dubbed "the beautiful cigar girl" (in the *New York Tribune*'s report of her death), she helped Anderson's business prosper. Much has been made of one incident that took place nearly three years earlier, on October 4, 1838, when Mary supposedly

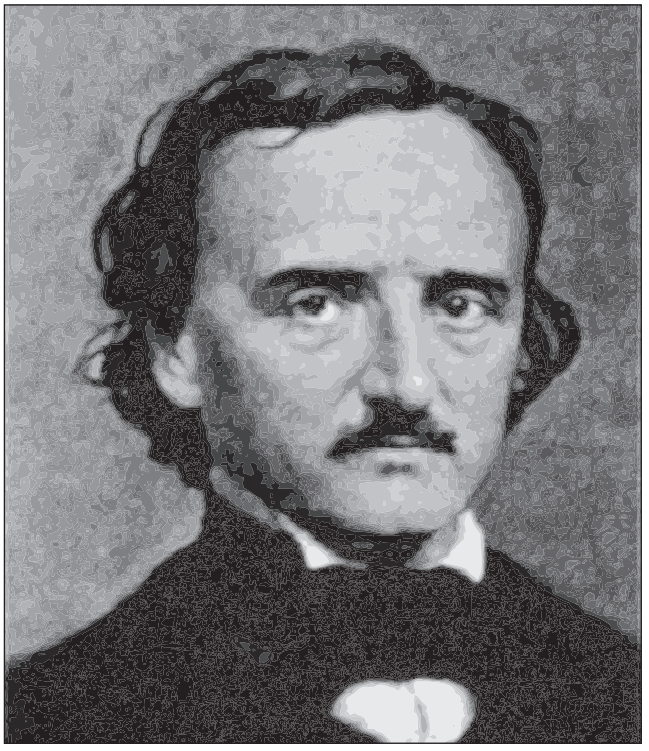

Figure 1. Edgar Allan Poe fictionalized Mary Rogers's murder in "The Mystery of Marie Rogêt."

disappeared and left behind a suicide note. Reportedly, however, she had merely gone on a few hours' visit to an aunt in Brooklyn, and the note was a friend's prank. In what is evidence of myth-making, one source (Wilson 1988, 216) even reports the "disappearance" lasted for six days—a scenario clearly refuted by the newspaper accounts (Srebnick 1995, 55–56).

On Sunday morning, July 25, 1841, Mary Rogers did indeed disappear. That morning she told her fiancé, Daniel Payne, a corkcutter boarding at the Rogers house, that she was leaving to visit her aunt, Mrs. Downing, who lived uptown. Mary said she would return later that evening, and Payne promised to meet her at the dark omnibus stop about a block away. When she failed to return by Monday morning, he searched for her and then went to the offices of the New York *Sun* where he placed a missing-person notice for Tuesday's paper. (His description is partly the basis for the drawing in figure 2.)

Alarmed by the *Sun* notice, Mary's former suitor, Alfred Crommelin, also searched for her. After talking with her mother, Phoebe Rogers, Crommelin and a friend crossed the Hudson where they encountered a crowd gathered around the retrieved corpse of an apparently drowned female. Her face was battered beyond recognition, but Crommelin cut open one sleeve to reveal a certain hairy mark on the arm that—together with the clothing—identified the body as Mary's. Despite later speculation, Mary's mother confirmed the identification based on her daughter's distinctive clothing (Walsh 1968, 18–21; Srebnick 1995, 17–18, 36).

Proliferating Theories

In time, an almost bewildering variety of notions was put forth purporting to explain the tragic death of Mary Rogers. Here is a look at each in turn.

Drowning. Despite the findings of the Hoboken coroner (which we will discuss presently) the coroner for the city of New York later had Mary's body exhumed from its shallow grave and taken to the Dead House in City Hall Park for a second autopsy. The death was officially registered on August 11, 1841, with the cause given as "drowned" (Srebnick 1995, 19). In fact, Mary did not drown, having been dead before her body entered the water. Upon recovery there was, for example, "no foam, which issues from the mouth of persons who die by drowning" ("Examination" 1841). (Indeed, according to a pathology text, "Abundant foam is usually noted exuding from the mouth and nostrils of a drowning victim" [Spitz 1993, 502].) More profound evidence would soon be apparent.

Botched abortion. More than a year after Mary's death came an apparent solution to the mystery. Frederika Loss—keeper of Nick Moore's House, a tavern in Weehawken near where the body was found—reportedly made a deathbed confession: Mary had come to the tavern accompanied by a young physician who attempted to abort her unwanted pregnancy. Loss claimed, according to the *Tribune*, that Mary died during the procedure and that one of Loss's sons disposed of the body. In fact, the alleged confession was nonexistent. Although Justice Gilbert Merritt believed Mary indeed died of a botched abortion at the tavern, he publicly denied the truth of the *Tribune* article that had reported a confession by Loss.

Nevertheless, the rumored confession of a botched abortion triumphed over other speculation and came to be regarded as truth. Mary's death thus became a factor in New York State's criminalization of abortion in 1845. Even Poe modified his story to incorporate the abortion theory (Srebnick 1995, 14–32; Stashower 2006, 209). Yet that possibility was refuted, as we shall soon see.

Post-abortion murder. Raymond Paul, in his highly imaginative *Who Murdered Mary Rogers?* (1971), writes that Mary

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survived the abortion on Sunday, only to be murdered on Tuesday—a bizarre scenario based on Mary's body still apparently exhibiting rigor mortis when it was recovered on Wednesday. Paul believed that "the effects of rigor mortis do not last for more than fifteen to seventeen hours" and that therefore "the presence of rigor mortis in the body on Wednesday afternoon proves medically, scientifically, conclusively, that *Mary Rogers could not have been murdered earlier than Tuesday afternoon*" (Paul 1971, 147–148).

In fact, Paul is in error,[1] especially in mistaking the stiffening in the arms for rigor mortis. According to Geberth's *Practical Homicide Investigation* (1990, 175), "Under certain conditions the stiffening of the hands or arms may take place immediately at the time of death. This is known as *cadaveric spasm* and is often confused with rigor mortis." Typically it occurs when the hands are clenched (possibly clutching something) at the moment of death. In the case of Mary Rogers's body, "the right hand was clenched," the left partially so ("Examination" 1841). In contrast to rigor mortis, cadaveric spasm does not disappear after several hours but, in fact, "remains until putrefaction" (Geberth 1990, 175).

Murder-suicide. Observing that Daniel Payne "has never been seriously suspected of his fiancé's death" and conceding that Payne had an "airtight alibi" for Sunday, Paul notes that if Mary were not killed until Tuesday, then the alibi is useless. Paul argues that Mary was pregnant (an assertion lacking proof) and that the father was neither John Anderson (the cigar store owner) nor Alfred Crommelin (her former suitor) but instead Daniel Payne, who murdered Mary because she ended their relationship.

Significant to this theory is the fact that Payne died by his own hand on October 7, about two and half months after Mary's death. On that day, Payne visited Nick Moore's House and then asked directions to the murder site (discussed later), where he drank a lethal dose of laudanum (a tincture of opium) and wandered off. He was later discovered lying on a bench, barely alive, and was soon dead. At the murder thicket, his silk top hat bearing a mourner's black crepe band was found, as were shards of glass from the laudanum vial he had purchased from an apothecary near the Rogers boardinghouse. In his pocket was a note, written in pencil: "To the World—Here I am on the spot; god forgive me for my misfortune in my misspent time" (Stashower 2006, 169–171; Srebnick 1995, 22–23).

The note might be interpreted as an oblique confession, but it seems in keeping with his grief since Mary's death. He had been nearly insane, drinking heavily, and, on the evening before his death, said to a bar patron, "Suppose you know me? . . . Well I'm the man who was to have been married to Mary Rogers—I'm a man of a good deal of trouble" (Srebnick 1995, 22). As already noted, Payne had an unshakable alibi on the day Mary went missing. Also, it was not he but a very different man who was last seen with her, just before her disappearance, as will soon be demonstrated.

Murder by another suspect. The police interrogated a number of men as possible suspects in the murder, including Mary's former suitor, Alfred Crommelin, who had an alibi for the Sunday of the murder; Rogers boardinghouse tenant William Kiekuck, a sailor, who likewise could account for his time on the fatal Sunday; an engraver named Joseph Morse, who had been seen in the company of a young lady, although she turned out not to be Mary; and her employer, John Anderson, against whom there was nothing more than hypothetical suspicion (Stashower 2006, 139–145, 155–156, 302–308).

In "The Mystery of Marie Rogêt," Poe hints at the identification of a mysterious naval officer as the real killer, but this seems merely to be the author taking literary license and employing verisimilitude (Poe 1842–43; Ingram 1968, 75–78; Stashower 2006, 296–301). Other researchers have gone so far as to try to build a case against Poe himself (e.g., Wallace 1955, 214–215),

Figure 2. Author's reconstruction of Mary Rogers's appearance on the day of her death.

although, as Stashower notes, "it has never been demonstrated that Poe ever actually laid eyes on Mary Rogers" (2006, 301).

Gang-rape murder. The initial autopsy of Mary Rogers's body, performed by Hoboken, New Jersey, coroner Dr. Richard H. Cook, concluded that she had been "horribly violated by more than two or three persons"—a determination that later writers have found baseless and even ridiculed. However, as reported in the *Herald*, Cook discovered excoriations on her wrists that suggested she had been tied. Also, a strip of her muslin petticoat was found around her neck that "was probably held tight round her mouth by one of her brutal ravishers." She had been strangled by a "piece of fine lace trimming" tied in a knot so tightly about her neck "as to have *been hidden from sight* in the flesh of the neck."

Unfortunately, the *Herald* reporter now felt he must invoke

discretion in other matters described as "of such a nature that it cannot be given in detail." The doctor did "state positively that the poor girl had been brutally violated" and gave "sufficient reasons" (omitted from the news report) for concluding it was "*by more than two or three persons*," asserting that "previous to this shocking outrage," she had evidently been a person of "chastity and correct habits." On surer ground, Cook "found that there was not the slightest trace of pregnancy" ("Examination" 1841).

Although forensic science was then in its infancy, a medical examiner could—through dissection of the internal organs—have determined whether or not there was a *corpus luteum* (fetal body), proving pregnancy. He might also have noted the absence of uterine damage indicative of an abortion, and he might have observed a freshly broken hymen that would simultaneously indicate prior virginity and, with the other evidence, rape (Gonzales et al. 1954, 579–591, 603–604).

According to folklore in the Hoboken area, both Mary and a man accompanying her were murdered by a gang, and the couple's bodies were thrown together into the river.

However, the conclusion that the rape was perpetrated by "more than two or three persons" would be questioned even in such a case today, absent DNA evidence. Cook may have based his opinion not on his examination of the "feminine region," where there was a cluster of abrasions and bruises, but of her back, from excoriations on which he envisioned her "struggling to get free, while being brutally held down on her back to effect her violation" ("Examination" 1841; see also Stashower 2006, 81). That, however, could have been accomplished by a single man, and there is evidence that there was indeed a sole perpetrator.

Gang's double murder. According to folklore in the Hoboken area, both Mary and a man accompanying her were murdered by a gang—Loss's three sons, supposedly—and the couple's bodies were thrown together into the river. This story dates from long after the death of Mary Rogers (Clemens 1904) and lacks all credibility. Although a body fitting the description of a man seen with Mary was allegedly found floating in the river at the end of Barclay Street on August 3, the body in question did not resemble Mary's companion and was recovered (according to a newspaper) from "the East River, at the foot of Catharine Street" (Wimsatt 1941, 246, n. 81). Again, as we shall now see, the evidence in the case points not to a gang at all but to a single individual.

The Solution

Evidence as to what really happened to Mary Rogers was available from the beginning. Although some writers have bought the botched-abortion scenario—termed the "most plausible explanation" (Srebnick 1995, 32) and one that is "morally certain" (Walsh 1968, 77)—the best evidence is to the contrary.

Clearly Mary Rogers was raped and murdered. She had been throttled, probably rendered temporarily unconscious. Cook concluded that there were imprints of a man's thumb on the right side of Mary's neck and fingers on the left, and a gag was found tied around her neck. Obviously these represented attempts to silence her. The tavern keeper, Loss, recalled having heard, on the fateful Sunday at dusk, "a frightful screaming as if of a young girl in great distress, partly choked, and calling for assistance, and sounded like 'Oh! Oh! God!' etc., uttered in great agony," coming from the nearby woods. At the time Loss attributed the sounds to her boy Oscar and rushed out calling his name, whereupon (as reported the *Herald*) "there was a noise as of a struggling, and a stifled suffering scream, and then all was still." Finding her son safe, Loss shrugged off the sounds as coming from one of the "riotous miscreants" that had plagued the area all day (Stashower 2006, 166).

Indeed, by accident, the actual crime scene was discovered on August 25 by Loss's sons, who were "collecting sassafras bark" and entered a small thicket on the hillside. Inside were "three or four very large stones, forming a kind of seat, with back and footstool to it" (*New York Herald* 1841). This rustic "seat" is credibly the source of the excoriations upon the victim's back, the "hard substance" foreseen by Cook, who had stated in his report that "the outrage was not effected on a bed" ("Examination" 1841).

The *Herald* also reported that the boys found a woman's petticoat on the upper stone. Nearby were other items subsequently identified as Mary's, including her blue scarf, parasol, and pocket handkerchief "marked with her name." Her gloves were reportedly found "turned inside out, as if they had been forcibly drawn from her hands in a hurry."[2] Two pieces of her dress were also found, apparently torn by thorns as she was dragged away—after, of course, being garroted by a strip of lace. The *Herald* continued: "In order that it may not be supposed that these things were placed there recently, it is proper to state, that from their appearance this could not have been the case. The things had all evidently been there at least three or four weeks. They were all mildewed down hard from the action of the rain, and stuck together from the mildew. The grass had grown around and over some of them."

Whether one or more men were involved is an issue unwittingly answered by Cook (who we recall posited the involvement of at least two persons). Cook described how a strip from Mary's dress had been torn up from the bottom, though not torn off, and wound three times around her waist; then it was secured "by a sort of hitch in the back." This was thought to have served as a handle for dragging the corpse to the riverbank ("Examination" 1841; Stashower 2006, 82). Poe's fictional detective, Dupin, perceptively pointed to the cloth handle as one of the indicators of a single assailant, since a gang would have been able to carry the body easily without such a preparation.

Neither would a gang have needed to take down the rails of two fences between the murder scene and the river. Two persons could have simply lifted the corpse over the fences ("Examination" 1841; Poe 1842–43, 201). There are also other indications that a single individual was responsible. But who was he?

The Perpetrator

In its report of "A HORRIBLE MURDER," the *New York Tribune* (August 2, 1841) stated that "Miss [Mary] Cecilia Rogers" who was "known as 'The Beautiful Cigar Girl'" had left her Nassau Street residence for a walk on "Sunday morning week" (i.e., July 25). "At the corner of Theatre Alley she was met and accosted by a young man, apparently an acquaintance, with whom she proceeded toward Barclay-st. as if for an excursion to Hoboken."

Indeed, after discovery of the crime scene became public, a Hoboken coach driver named Adam Wall came forward with important testimony. While he had been waiting at the river dock for fares, a friend had called attention to a beautiful young lady whom he realized now was Mary Rogers, accompanied by a "swarthy man." The pair declined the coach and proceeded on the path to Weekawken, where stood Nick Moore's House.

The keeper of that tavern, Loss, would later testify that on the Sunday of the murder, a young woman perfectly fitting Mary Rogers's description had entered the roadhouse with a young man of "swarthy" complexion. He took liquor from a tray that was passed, offering Mary a glass, but she asked instead for lemonade. In time they strolled off, Mary on the man's arm, down the path that wound past the murder thicket (Stashower 2006, 163, 165–166). We know the rest of the gruesome story.

With the beginning of the modern spiritualist movement in 1848 (Nickell 1995, 17–24) came imagined opportunities for "mediums" (those who supposedly talk with spirits) to divine the true facts in the Rogers case. In his old age, Mary's former employer, John Anderson, became a convert to spiritualism and came to believe he was in frequent "face to face" communication with Mary in the spirit realm. She supposedly gave Anderson her murderers' names—the plurality of which conjures up the discredited gang theory—but he refused to reveal them, or so says a dubious source (Lane 1930). As well, Andrew Jackson Davis—spiritualist and novelist—penned a fictionalized account of Mary's tragedy called *Tale of a Physician: or the Fruits and Seeds of a Crime* (1869), but he simply based it on the discredited botched-abortion theory.

Nor have any of the myriad spiritualists who have followed Anderson (d. 1881) and Davis (d. 1910) yet provided credible, otherworldly testimony that would solve the murder. Their boasted abilities notwithstanding, none appears to have done any more than guess at the nature of the crime.

So Mary Rogers was not the victim of drowning or a botched abortion, nor of murder following an abortion, nor of a murder-suicide; neither was she murdered (singly or with another) by a gang, nor by any one of several suspects considered at the time. The best evidence shows she was raped and strangled by a single individual, an unidentified young man with a "swarthy" complexion.

The swarthy man remains an enigma. Witnesses who saw Mary with him near her residence were unable to identify him as William Kiekuck, the sailor who boarded at the Rogers house. Likewise, Loss insisted he was not Mary's suicidal suitor, Daniel Payne, but one who she said was "younger, thinner and not so tall" (Stashower 2006, 134, 178). If we recognize the true fate of Mary Rogers, we at least cease to victimize the victim and place the focus on an evil man who—though not identified—is described and distinguished from several maligned but innocent suspects. As unsatisfactory as this realization is, it does represent a measure of justice.

And there the matter rests—as uneasily as Mary has seemed to rest in her grave. Following the exhumation and second autopsy, Mary's decomposing body was buried in the West Presbyterian Church cemetery at the north end of Varick Street. However, years later when the church was demolished, the remains that could be found were transferred to Long Island cemeteries. It appears "the mortal remains of the Beautiful Cigar Girl have vanished forever" (Walsh 1968, 21). As so often is the case, mysteries are solved, yet mysteries remain. □

Notes

1. Rigor may last thirty-six hours or more (Swanson et al. 1988, 263).
2. When Mary's body was recovered, "fingerless gloves" were said to have been on her hands, but this was probably an error (Walsh 1968, 86, n. 19).

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FOLLOW-UP

Climate Wars: Reaction to SI Coverage

Four separate and independent short pieces in our March/April 2010 issue on the climate science controversy, which on the cover we collectively labeled "Climate Wars: Science and Its Disputers," set off a storm of reaction. Our pieces consisted of David Morrison's Q&A article "Disinformation about Global Warming"; two commentaries, Mark Boslough's "Mann Bites Dog" and John Mashey's "American Physical Society Rejects Climate Anti-Science"; and Massimo Pigliucci's "Thinking About Science" column "Climate Denialism." Most who wrote in response were critical, some vociferously so. Seven readers canceled their subscriptions or said that they would not renew. Many uncritically repeated accusations about alleged misconduct of certain climate scientists, made strong assertions about the supposed facts of the controversy, and repeated arguments widely spread in the previous weeks in the media, blogs, and opinion columns. (Many of those "facts" and arguments have subsequently been repudiated.) The matters were even actively debated on SI's Facebook page, where SI got some welcome support. Since then there have been a number of new developments. Some I summarized and commented upon in my editorial "The Winter of Our Discontent" in our May/June 2010 issue. Others are new since then. Two independent investigations into the conduct of the head of the Climate Research Unit at East Anglia University have now been completed. Those and other results are reported in a news article (and sidebars) in this issue ("Investigations Exonerate Climate Research Unit of Scientific Misconduct," page 6), which should be read in conjunction with the following exchanges. We begin our summary of reaction to our March/April articles (most of it received within the first several weeks of publication) with SI columnist and contributing editor (and CSI fellow) Robert Sheaffer's extended overall complaint, followed by a sampling of the letters received and then replies by our authors. As for SI, in this and all other scientific controversies, we provide an open airing of the issues and arguments but will continue to be guided by the data and the published scientific evidence.

—KENDRICK FRAZIER, EDITOR

Reply to David Morrison, Massimo Pigliucci, Mark Boslough, and John R. Mashey on Climate Skeptics' Alleged 'Anti-science' and 'Disinformation'

ROBERT SHEAFFER

It is regrettable that just as the case for anthropogenic global warming (AGW) was collapsing globally, SI decided to mount an all-out rear-guard action defending it. The climate may or may not be warming, and if it is humanity may or may not be the primary cause, but the evidence put forth to support the AGW claim is now seen as seriously tainted by bias and manipulation and hence unsuitable as a foundation for anything. Even Britain's Weather Office has now proposed "a new international analysis of land surface air temperature data," this time using "verifiable datasets starting from a common databank of unrestricted data" and "methods that are fully documented in the peer-reviewed literature and open to scrutiny." The government of India has established its own climate-monitoring agency, saying that it "cannot rely" on the UN's Intergovernmental Panel on Climate Change (IPCC), and three large companies recently resigned from the U.S. Climate Action Partnership, a group that lobbies for pro-AGW political causes. It's obvious they can read the handwriting on the wall, even if many "skeptics" can't.

SI may someday suffer the fate of being remembered in the same breath as the last diehard defenders of Lamarck and Lysenko: those who fell victim to a politically driven perversion of science, who failed to see the problems because they were blinded by their ideology. Our critics have long charged that skeptics' organizations like the Committee for Skeptical Inquiry (CSI) exist to defend the scientific *establishment*, rather than to defend truth, and I fear we have just given them the most powerful ammunition yet to prove their point.

Boslough writes, "The global warming debate continues, at least among the science-challenged," as if questioning AGW doctrine were a sign of stupidity. A spirited defense of AGW might have seemed justifiable a few months ago, when those papers were being written. Today, however, we find the longtime head of the Climate Unit at the University of East Anglia and the lead developer of the so-called "consensus" climate model, Dr. Phil Jones, having stepped aside over leaked e-mails that show him and other leading climate modelers nakedly manipulating data, hiding flaws, and shutting out dissenting voices. The original climate data on which their model is based has "gone missing" (as in, "the dog ate my climate data"). Apparently Boslough counts it a mark of wisdom to simply accept such

shoddy goings-on. Jones now concedes that the current climate may be less warm than during the Medieval Warm Period, which represented a purely natural climate fluctuation, and that there has been no statistically significant warming since 1995.

Morrison writes, "This is not the place to make the case for global warming: that is done very well in the reports of the Intergovernmental Panel on Climate Change." So I assume he believes that the Himalayan glaciers will melt by 2035? That half of the Netherlands is below sea level, that 40 percent of the Amazon rain forest is threatened by global warming, as well as 50 percent of Africa's crops, and that global warming has caused an increase in hurricanes? All of these claims that appear in the IPCC's "peer-reviewed" science report are now acknowledged to be without foundation. The UN's IPCC 2007 Climate Report, touted as "settled science" supposedly endorsed by over 2,000 scientists, has become a laughingstock, as its numerous flaws have at last been publicly noted. (And it is a curious fact that the British papers, even those of a liberal persuasion, have aggressively investigated this scandal as proper journalists should, while those in the U.S. are obviously too timid and awestruck to investigate.)

It began with the exposure of the doomsday prediction that all Himalayan glaciers could melt by 2035, which turns out to have been based on one scientist's offhand comment in an interview, not on any research. The climate researcher responsible for its inclusion in the IPCC report has admitted that he knew the claim wasn't verified but included it purely to put political pressure on world leaders. More flaws soon surfaced: the IPCC's claims that global warming was related to an increase in natural disasters was likewise shown to be unsubstantiated; its claim that 40 percent of the Amazon rain forests would perish from global warming was shown to come from a climate advocacy magazine; and its oft-repeated claim of a 50 percent reduction of African crops came from a Canadian advocacy group. Thus, the IPCC report, the Holy Bible for AGW proponents, is seen as a document not of peer-reviewed science but of carelessly assembled political advocacy. If all this doesn't set off skeptical alarm bells ringing in your head, then you've fallen asleep in a poppy field somewhere and have no further right to call yourself a "skeptic."

Piglucci claims it is a "fact" that "Earth's temperatures have been out of sync with the solar cycle for more than forty years." I don't know where he got that supposed "fact," but I was unable to find any facts that support it. The warmest year of the most recent warming trend, 1998, matches quite closely the peak year of the most recent solar maximum, which was 2001. Since then, sunspot levels have declined precipitously, and the warming has, at least for now, stopped. However, it is unwise to read too much into climate trends as short as the eleven-year average solar cycle. The Maunder Minimum of 1645 to 1715, a time of exceptionally low sunspot count, occurred during what is termed the Little Ice Age, a time of very cold global temperatures. The next solar cycle was supposed to begin in 2007; however, the expected sunspots have as yet failed to materialize, resulting in record low solar activity. If this were to persist, we would expect global temperatures to cool significantly.

Of the Climategate e-mails, Morrison writes, "There is no evidence, however, of fudging or suppressing the climate data." *That is absolutely false*—indeed, much of the controversy over the e-mails concerns "data fudging" and silencing critics. Similarly, Bill Nye, appearing on *The O'Reilly Factor* on Fox News, misrepresented the Climategate e-mails as showing disagreements between individual researchers, not bias and collusion to produce a desired result. Since when do "skeptics" have to resort to misrepresentation before the public?

In one of the controversial e-mails, Phil Jones wrote that he had "just completed Mike's *Nature* Trick of adding in the real temps to each series for the last 20 years (i.e., from 1981 onwards) and from 1961 for Keith's *to hide the decline*" (emphasis added). If that isn't evidence of "fudging or suppressing the climate data," then I don't know what would be. Morrison's defense of the revealed shenanigans as illustrating "how real scientists work, warts and all" is beyond shocking. It may well be true that manipulation of data and the peer-review process are all-too-common in science. But where we see such abuses occur, we must blow a loud whistle, proclaim a penalty, and *discard all research resulting from it as tainted*.

Boslough accuses those he calls "denialists" of having "improperly graphed data using tricks to hide evidence that contradicts their beliefs." Doesn't this perfectly describe Jones's "hide the decline" trick above? And the famous hockey stick graph of the IPCC, seen on page 49 in Morrison's article, is the center of an enormous controversy over its data reduction and its methods, a controversy that these pro-AGW authors as well as CSI seem determined to ignore. However, Jones's recent admission that the Medieval Warm Period may have been as warm as or warmer than current temperatures implies that human civilization has not, thus far, been shown to have altered global temperatures outside of normal climate variations and also implies that the hockey stick graph cannot be defended. This is doubly true, since the original data underlying the hockey stick graph has "gone missing."

John R. Mashey attributes much of the questioning of AGW doctrine to "marketing campaigns by coal companies" and compares them to tobacco companies. Yet is there not an equal, and probably even greater, financial incentive to promote the alleged AGW "crisis" on the part of those whose careers stand to benefit from grants, subsidies, etc. to organizations that study global warming or purport to remedy it? For years now, billions of dollars from governments and foundations have flowed into the pockets of what might be called the global warm-

ing industry, with probably no one benefiting as much as Al Gore himself. Similarly, Pigliucci asserts that those he calls "the other side" have no "real interest in the truth about climate change," and he claims that the "real story" is "the systematic spending of millions of dollars by large energy companies." The chairman of the UN's IPCC, Dr. Rajendra Pachauri, is also the director-general of The Energy and Resources Institute (TERI) based in Delhi, India, which has received millions of dollars in funds for climate-related research projects. *Why* did no "skeptic" consider the possibility of bias arising from blatant self-interest on the pro-AGW side? Piglucci would have us see the self-enriching Pachauri as impartial and completely scientific, while those who question him are self-serving and beholden to industry.

The global warming debate is not the first time, even in recent years, that a political group has attempted to force its wishes onto the public through the manipulation of science. In recent decades, an unholy alliance of the scientific and/or other academic establishments has promoted numerous questionable claims that have powerful political implications: the banning of DDT, the panic over "acid rain," the "ozone hole" and CFCs (the largest Antarctic ozone hole ever recorded was in 2006, almost thirty years after CFCs were banned in the U.S.), the "Nuclear Winter," "recovered memories" of abuse by Satanic cults or daycare providers, "ancient matriarchies" (claimed by academic feminists), etc. All of these claims are at best questionable, and quite likely bogus, but were defended fiercely and emotionally, just like AGW today. These should be termed *advocacy science* to distinguish them from normal science, where no pre-existing group has a strong vested interest in any particular outcome. When a new and not yet firmly established scientific theory suddenly appears and finds fierce support from those of certain political persuasions, labeling those who question it as stupid and/or evil persons, you can be reasonably sure that you have stumbled upon some practitioners of *advocacy science*, attempting to defend the undefendable.

CSI and other "rationalist" organizations will soon face a huge difficulty in explaining to the public how they came to not merely accept but unconditionally defend a since-abandoned scientific theory, *even to the point of belittling those who dared question it*. It is no shame to discuss, and perhaps even tentatively accept, a scientific theory that might later turn out to have been wrong. But it is shameful in the extreme to vilify those who dare question a wobbly scientific theory, especially when many of their criticisms turn out to be largely substantiated. *Not only has CSI been defending an error, but it has repeatedly insulted people who were defending truth*. To maintain any future credibility as a defender of the scientific method, CSI will have to boldly step forward and say: *we were wrong*. We also must apologize to those we insulted while we were swept up in the powerful AGW frenzy and then explain how this error came to happen and why it will not happen again.

If nothing else, the AGW debacle can be used as an example of the ultimately self-correcting nature of science, even in the face of powerfully entrenched interests.

I keep reflecting upon how my mentor in skepticism, the late Philip J. Klass, wrote a dedication in his first UFO book to "my father, the late Raymond N. Klass, from whom I learned to withstand the sometimes fierce pressures of prevailing opinion." It seems to me that this is a lesson that CSI needs yet to learn.

Robert Sheaffer
Lakeside, California

I am disappointed and saddened to see the one-sided view of the global warming debate presented in David Morrison's "Disinformation about Global Warming" and Massimo Pigliucci's "Climate Denialism." These articles suggest that climate skepticism is as unscientific as the pseudoscience that SI regularly debunks. But even the IPCC Summary referred to by Morrison takes a much less strident view. While the report says that "warming of the climate system is unequivocal," the report is less certain about the human component, per the quote: "Most of the increase in global average temperature since the mid-20th century is *very likely* due to the observed increase in anthropogenic GHG concentrations" (emphasis added). The phrase "very likely" is generally thought to imply about 90 percent probability, which leaves plenty of room for scientific skepticism. Of course, the IPCC report has since been shown to be contaminated by unscientific exaggerations from advocacy groups (regarding Himalayan glaciers, Amazon rain forests, and Dutch vulnerability to flooding), so if the phrase "very likely" is biased, I'm guessing the bias is toward alarmism.

John Golob
Kansas City, Missouri

Part way into an enjoyable reading of the March/April 2010 SKEPTICAL INQUIRER, I had to reassure myself that I was reading a truly skeptical magazine. Three almost arrogant global warming articles, not one by a climatologist, and not one with a whisper of doubt (skepticism) about anthropogenic global warming, hit me one by one. Talk about overkill, or protesting too much.

Many, if not most, of my geologist friends and associates take a skeptical position of the "anthro" aspect of global warming (somebody has to do it). From the geologic view, which takes in a much longer time scale than the almost minuscule recent time span, a definite rhythm to the heating and cooling cycles has occurred throughout geologic time. Although we know this has happened, the reasons are extremely complicated and debatable—even more so with the recent introduction of human activity. Because of these millions of years of evidence, we take a skeptical view that human activity is necessarily or entirely responsible for our current, relatively few, geologic seconds of global warming.

Finally, I want to emphasize that most of us are not deniers. That would put us in the same dogmatic category as those who consider the matter settled.

Henry Walrond
Geologist
Bakersfield, California

Your March/April 2010 issue was a true disgrace to any magazine with the word "skeptic" in its title. Faced with the biggest scandal in science in about fifty years, you might have actually thrown some light on why the anthropogenic global warming edifice is crumbling before our eyes. Instead of this, you provided a platform for left-wing attestations of faith: four, count them, four juve-

nile attacks on those who doubt the Church of Settled Science. . . .

Real scientists, as contrasted to the shills you've given a platform, understand the immense damage that the comprehensively politicized AGW movement has inflicted on science generally and scientific authority. . . .

I reluctantly cancelled my longtime subscription to *Scientific American* after its hit job on Bjorn Lomborg. The time has come to do so with SKEPTICAL INQUIRER, to which I've subscribed for about fifteen years. If I was interested in left-wing venting, I would subscribe to *Mother Jones*. Please cancel my subscription and refund the balance of my subscription funds.

John Courtade
Austin, Texas

I can no longer tolerate your journal's head-in-the-sand approach to "climate change." You call credible scientists "deniers," an obviously political label, but you do not investigate adherence to scientific principles. The majority of nongovernmental, non-university scientists doubt anthropogenic global warming, yet you publish nothing by them. Rather, you publish rants from nonscientists, i.e., Pigliucci, a "philosopher." The most recent disclosure by the UN IPCC is that there has been no warming in the past fifteen years. That should document the huge scientific fraud propagated by power-hungry politicians. Please cancel my subscription.

Bruce M. Bell, PhD
Paleontologist
Oklahoma City, Oklahoma

Fact check: Pigliucci is *a scientist, with PhDs in botany and genetics, as well as a philosopher.* —*ED.*

With the recent revelations of scientific misconduct on the part of some AGW researchers—from "hiding the decline" to the admission that inaccurate glacier data were included in the IPCC report—I greatly looked forward to the March/April 2010 SKEPTICAL INQUIRER. While I didn't expect SI to do an immediate about-face on their position on AGW (cherished beliefs—especially politically convenient ones—die hard even among skeptics, after all), I was hoping for a new look at the subject, or at least an investigation into the fraud and faulty methodology practiced by some AGW proponents.

Alas, it was not to be. Instead, SI tied itself into knots trying to excuse the professional misconduct. From continuing to claim a nonexistent "consensus" (it's easy to claim a consensus when dissenters are automatically dismissed as unqualified) to excusing fraud to the equation of the *a priori* dismissal of opposing-view articles with the peer review process(!)—it was painful to read.

I have been a subscriber for more years than I remember, dating back to the old "small format" days. But with more and more articles taking a political slant, and with many seemingly nonpolitical (and otherwise excellent) articles containing gratuitous shots at those whose politics are different, I find myself less and less enthused to find SI in my mailbox. Reluctantly, I have decided not to renew my current subscription when it expires. I do not make this decision lightly. It is never easy to end a twenty-or-so-year relationship. I truly hope that the day will come when SI once again stands up for science and skepticism over politics and reverts to its longtime role as a voice for rational thought over superstition and the paranormal.

Anthony Schaller
Albuquerque, New Mexico

Apparently Mark Boslough and David Morrison wrote their pieces before Phil Jones's interview with the BBC. Surely they have read it by now. What are their reactions to Phil's comments about the state and reliability of his data? About the issue being settled? His other answers?

Boslough makes a big point about the peer-review process. I could not agree more. Based on Jones's e-mails, however, he apparently does not. He wants to change the process and exclude anyone who might find fault with his work. Note Jones did not want anyone, *regardless of their credentials*, to review his or any other like-minded colleague's work.

Maybe things have change since I was taking science courses back in college forty years ago, but I was taught the essence of science is to be able to replicate results. To replicate you at least need the data. Yes, Jones's work was peer reviewed. If, however, you select only like-minded colleagues to do the review, is it really independent? While Jones is undoubtedly highly regarded as a scientist, he also seems to have become a "true believer."

While I agree with many of David Morrison's comments, maybe he is "shocked" by the public's skepticism because he is too close to the issue. I would direct his attention to an article in *The Weekly Standard*'s March 15, 2010, issue. What the public sees is the lead scientist, Phil Jones, backtracking and in essence contradicting the Al Gores of the world. They see the IPCC report loaded with errors, citing the WWF (a fine advocacy organization but not exactly unbiased), student papers, and other non-peer-reviewed studies as scientific fact, grossly misrepresenting some study results, ignoring many contributing scientists' objections to findings, and rejecting countervailing ideas. Turns out this is a political document, not science.

Maybe it was a timing problem that these articles came out when they did. Given the more recent evidence, I would expect the SKEPTICAL INQUIRER to now turn its skepticism toward those who continue to brush off the latest findings to the unscientific ramblings of "deniers." Apparently there are many credentialed "deniers" and many former "true believers" who are having serious doubts about what has been going on.

I anxiously await a future article on this aspect of the issue. In fact, renewing my subscription depends on it.

Roger Kenney
Arlington Heights, Illinois

Taking a stand for science in the AGW debate means opposing the data manipulation and abuse of peer review as revealed by Climategate. AGW theory makes contradictory predictions (e.g., more/less snowfall) and fails Popper's falsifiability test and is thus not scientific. Phil Jones cannot now produce his data for validation. Yet, in what must be the last gasps of AGW consensus, you have assembled in the SKEPTICAL INQUIRER four of four articles, commentaries, and columns in support of the dubious AGW orthodoxy. ClimateDepot.com provides a clearer perspective, I might suggest. Perhaps your next issue will do better.

Ronald L. Miller
Santa Fe, New Mexico

Over the last few years I have been troubled by SI authors' sanctimonious attitudes toward those of us who lack the certainty that they seem to have. I have read more than a dozen books on both sides and remain unconvinced, but I am not a denier—yet. I am troubled by the apocalyptic words on the one side (the only way Al Gore could be a more hyperbolic fear monger is to say that we must do something by midnight tonight) and rabid deniers who clutch at every straw and/or lie to forward their cause. I cannot recall any science whose *main* claim to fame seems to be "consensus." And I am just as troubled by what SI's authors do not say. At

one time, I had hoped SI would be a forum for real debate on this issue, not a pulpit. And I note that there is so much money involved that everyone has an agenda.

There are qualified people who disagree. Where are they? Is there a policy in place? To compare a twenty-year-old proto-science to evolution is utterly ridiculous. I could go on.

Lee Moller
Chair, British Columbia Skeptics

As a longtime subscriber I feel moved to write.

The general proposal seems to be that anthropogenic global warming consensus is formed by the data being gathered! What good is following this line of reasoning when this data seems to have been sorely corrupted? The East Anglia CRU falsified data, they refused to release data for peer review, and they destroyed data.

Maybe you can explain why the IPCC report had false information regarding the Himalayan glaciers, the Andes glaciers, the Brazilian rain forest, and the amount of Denmark that is below sea level.

Michael Mann's hockey stick graph is a shining example of lying with false figures.

Instead of a paycheck some folks should get a prison term.

The public has never had a strong faith in science; now that seems justified. Why should the average citizen pay heed to the institutions that have been caught blatantly cheating? How can any of the data be considered credible when so much of it has obviously been tampered with?

I am at a loss to understand how you folks can continue to support the AGW hypothesis in the absence of reliable data.

Why have we been fed corrupt data? Why are we being forced to accept a position that would put an unfair tax burden on industry? Why a redistribution of wealth that does little to correct a perceived problem?

Let's have less trumpeting and more inquiry.

Dennis Trimble
Morgan Hill, California

David Morrison misses the point when giving factual rejoinders to climate change skeptics. I think the reason for skepticism or denial among many people is that they don't want to change their behavior and, with some justification, suspect that governments will use it as an excuse to raise or create taxes.

The problem is that climate change doesn't have an obvious cause and effect relationship. If we have heavy rain today that causes a flood, it's not possible to link it directly to emissions from driving your car or heating your home the previous day, month, or years. Thus, it's easy for people to dismiss the science with rationalizations about conspiracies and vested interests.

We should turn the spotlight back to those who deny man-made climate change. Ask them why they think humans can shove billions of tons of CO_2 into the atmosphere every year without affecting the climate. Do they think these emissions are insignificant or that the Earth has an unlimited capacity to cope with them? If it was soot instead of CO_2, they'd see only too well the affect such massive human emissions can have.

Dene Bebbington
Wootton Bassett, Wiltshire, U.K.

The growing agnotology, as John Mashey so neatly described it, about climate change will be to the advantage of only a few large corporations. It's the same tactics and need that drove tobacco companies to try to avoid culpability for their products.

Nonscientists, like me, who are able to follow the field of climate change are easy targets for the anger of the climate change naysayers. If scientists hope to keep the public on their side, they need to get smarter about presentation. In one word, "Climategate," the reputation of science has suffered more harm than any conspiracy hound could manage in a thousand pages of polemic.

Web sites like RealClimate.org are invaluable, but generally they are not having the same impact as the mind-bending PR of the so-called climate change skeptics. I hope that emerging from the whole sorry stramash of "Climategate" this lesson is learned. There needs to be an Internet one-stop-shop of high-quality facts and counter arguments for the lay person, presented in a public-friendly manner. If we are not vigilant the contrarian voices will move from the Internet to lobbying and shaping government policy. This issue is too important to allow that to happen.

Katherine (Kate) Colebank
Brighton, East Sussex, U.K.

SKEPTICAL INQUIRER Authors Reply

Critics Exhibit Conditional Skepticism vs. Scientific Skepticism

MARK BOSLOUGH

The principle that guides scientific skepticism is best articulated by the famous quote popularized by Carl Sagan: "Extraordinary claims require extraordinary evidence." Sheaffer and other climate science critics, by contrast, are practicing a form of "conditional skepticism" in which they reject only things they don't like. But that requires them to embrace extraordinary claims for which there is no credible evidence.

Conditional skepticism, ironically, manifests itself as true belief—in this case, a belief that climate science is collapsing, that "Climategate" is the biggest scientific scandal in fifty years, that evidence has been falsified in a global conspiracy, that top climate scientists engage in deception and tolerate fraud with impunity, that the word "trick" must mean "fraud," and that it is improper to hide the decline in faulty tree ring data and add real (measured) temperatures when graphing temperatures.

Sheaffer believes the claims (now formally discredited) that the CRU temperature data were fudged. But he uses that very CRU data to argue for a link to the solar cycle. Only a conditional skeptic can have it both ways: use data when you think it supports your beliefs but reject it as "fudged" when you don't like what it reveals.

Conditional skepticism requires extreme gullibility and calls for beliefs that need not have any basis in fact. Many letter writers show themselves to be conditional skeptics by their expressions of

true belief in the guilt of Phil Jones based on a few e-mails whose content they did not understand. Jones has now been fully exonerated by two independent investigations. I predict that the critics will refuse to accept the impartiality of the panel members. As conditional skeptics, they must now embrace an even more extraordinary claim: the investigators are also part of a grand global conspiracy!

Everyone should be skeptical of advocacy groups, whose claims should always be checked against dependable primary sources. However, Sheaffer and the other critics choose to be skeptical only of groups that advocate what they don't like. But these critics reveal the fact that their skepticism is conditional by credulously accepting statements about Phil Jones made by right-wing bloggers and neoconservative opinion magazines like *The Weekly Standard*.

A real skeptic would look up Jones's actual quotes in the original BBC interview. His statements were not "admissions" or "backtracking" but merely standard scientific caveats and nothing new. For example, he said, "Of course, if the MWP [Medieval Warm Period] was shown to be global in extent and as warm or warmer than today . . . then obviously the late-twentieth century warmth would not be unprecedented. On the other hand, if the MWP was global, but was less warm than today, then current warmth would be unprecedented." How could a true skeptic think that such a simple statement of definition merited such overwrought reporting by the denialist echo chamber?

Scientific skepticism requires that we set aside our prejudices and desires. I personally don't want to believe that we are putting our planet at risk, but my training as a physicist requires me to accept the fact that the laws of physics apply to the atmosphere. The surplus anthropogenic CO_2 molecules are plugging up the thermal infrared window that allows Earth's heat to escape into space.

I've heard the extraordinary claim that the atmosphere will somehow change in just the right way to mostly compensate. I've not seen any evidence for such a change, and I'm dubious that the required changes in cloud cover and lower humidity wouldn't be equally bad. The burden of proof remains on the party making the extraordinary claim. It may seem like arrogant certainty to some, but physicists do understand the physics of radiative transport in air. We just don't completely understand how the atmosphere will respond or how dangerous it will be.

Finally, I do not think that questioning AGW is a sign of stupidity. But embracing ugly and extraordinary conspiracy theories without evidence is a sign of willful ignorance. And blindly repeating defamatory claims about honest and hardworking scientists like Phil Jones is a sign of witless mean-spiritedness. In my opinion, that is worse than being stupid.

Mark Boslough is a physicist at a national laboratory in Albuquerque, New Mexico. His studies of cosmic impacts and their potential climate effects have led to his interest in climate change and the issues surrounding it.

The Refusal to Accept Scientific Evidence

DAVID MORRISON

It is tragic to see intelligent nonscientists (and longtime skeptics) refuse to accept scientific evidence if it contradicts their preconceptions. Sheaffer seems willing to dismiss the work of thousands of atmospheric and climate scientists from dozens of countries extending over several decades, preferring to believe accusations from the lobbyists and talk-show hosts who clearly do not understand (and perhaps don't care about) the science. His letter is a broadside against all science, attacking even such well understood and non-controversial issues as acid rain and the ozone depletion caused by CFCs.

The essence of science is to collect and analyze information, to apply rigorous analysis and numerical modeling, to publish both the methodology and the conclusions in peer reviewed journals, and to freely debate conclusions at meetings and in professional journals. The global warming denialists do none of these things: they collect no data, provide no alternate explanations or models, and do not publish their conclusions in scientific journals.

All of these letters criticizing climate science appear to be heartfelt statements of opinion. None of the authors is a climate scientist and none of them quotes any scientific evidence to support their opinions. Some of them, unfortunately, stoop to personal attacks on individual scientists and the scientific community. Their arguments parallel the recent campaign in the media intended to undermine climate science. Assertions that climate science is thoroughly discredited or that the edifice is crumbling before our eyes are nonsense. For example, a recent NASA data release shows that over the past forty years every decade (including the most recent) has been warmer than the one before, and the seven warmest years ever measured are 1998, 2002, 2003, 2005, 2006, 2007, and 2009 (www.nasa.gov/multimedia/podcasting/GlobalTemperature09.html). Also useful is a new NOAA Web site that includes a clear presentation of recent climate data (www.climate.gov). The evidence for rapid global warming is incontrovertible.

I am interested in the comments by Bell and Walrond. Although they did not identify themselves as such, both are in the fossil fuel industry (Bell as president of an oil company, Walrond a petroleum geologist). Walrond says that many of his geologist friends are skeptical toward the anthropogenic (human-caused) aspect of global warming. Yet just this month (April 2010) the Geological Society of America has reaffirmed its position that "concurs

with assessments by the National Academies of Science, the National Research Council, and the Intergovernmental Panel on Climate Change that global climate has warmed and that human activities (mainly greenhouse gas emissions) account for most of the warming since the middle 1900s." Bell writes that few "non-university, non-government" scientists support AGW. Of course, almost all climate scientists work in universities or government labs. The petroleum geologists he associates with come from a different background. Common sense tells us we should look to climate scientists for understanding climate change and to petroleum geologists when prospecting for oil.

Many of the letters question the reliability of future climate projections (e.g., dates for melting glaciers in the Himalaya or droughts in Africa). I and my climatologist colleagues agree. We understand the physics of the greenhouse effect, and numerical modeling helps understand the range of possibilities from bad to worse. Specific predictions (such as so many degrees of warming by a certain date) are necessarily uncertain for models of complex systems with multiple feedbacks and poorly defined boundary conditions. But my article and the others that the critics so vociferously attack said very little about such predictions. The issue is the data we have and its interpretation, and uncertainties in modeling future climate cannot justify denial of the facts of global warming today.

I am thankful that the SKEPTICAL INQUIRER and the Committee for Skeptical Inquiry are committed to defending real science. Global climate change is too important to be swayed by wishful thinking or politically based attacks. There is much we don't know, especially in predicting the future course of climate change. But if we deny the current situation, we have no hope of understanding the future that faces our planet.

David Morrison is a senior NASA planetary scientist. He is a fellow of both the American Association for the Advancement of Science and the Committee for Skeptical Inquiry and is a frequent contributor to SI.

The Twenty-Year Effort to Create Doubt about Climate Change

JOHN R. MASHEY

Since the other authors covered most of the points I might have mentioned, I'll just add a few more.

The American Physical Society, after various reviews, basically reaffirmed its position on climate change, which can be found at www.aps.org/publications/apsnews/201005/council.cfm.

I noticed many of the letter writers live in the Southwest, a water-stressed area whose stress under climate change will increase, ranging from bad to worse. Thoughtful people might examine a recent 188-page book by the U.S. Global Change Research Program, *Global Climate Change Impacts in the United States*, written by experts for a general audience. It is freely available at www.globalchange.gov/publications/reports/scientific-assessments/us-impacts. The "Regional Climate Change Impacts" section discusses each region, with a one-page overview and then a five-page report. For example, some areas of the U.S. Southwest seem headed for 30–40 percent less precipitation on the current emissions path, which will make for an interesting future life for today's young children. Each area has its own issues, like sea level rises along the coasts and loss of snowpack in places that depend on it for summer water and hydropower. Some places, like the U.S. Midwest, will likely get more precipitation in ways that will increase flood damage. I hope people will take the time to read five or ten pages, and then decide to read more of this document, because the difference between low and high emissions choices is the difference between bad and much worse for the future prosperity of the U.S.

Finally, if you are interested in the machine that generates climate anti-science disinformation, see the latest update of my detailed document "Crescendo to Climategate Cacophony" (PDF openly available at www.desmogblog.com/crescendo-climategate-cacophony). This report looks at the people, organizations, and funders who have run a twenty-year effort to keep the public in doubt about climate science. Some of the same people helped the tobacco companies, whose long-term revenues depend on addicting children, requiring great marketing and lobbying. By comparison, confusing people about climate science is easy. Science tries to understand and explain complex truths about the real world and is often disadvantaged when battling an anti-science marketing campaign. The latter can just use simple lies and need not be consistent with reality or even itself. Some people manage to believe multiple contradictory reasons, as long as they all oppose science. Some even call themselves skeptics while doing this, but they obviously use the term differently than SI. □

John Mashey is a half-retired Bell Labs/Silicon Valley computer scientist with an early background in math and physics. He used to design supercomputers and work with their users, including both petroleum geophysicists and climate modelers. Lately, he helps startups and studies energy and climate issues.

Paul Kurtz: A Titan of Skepticism

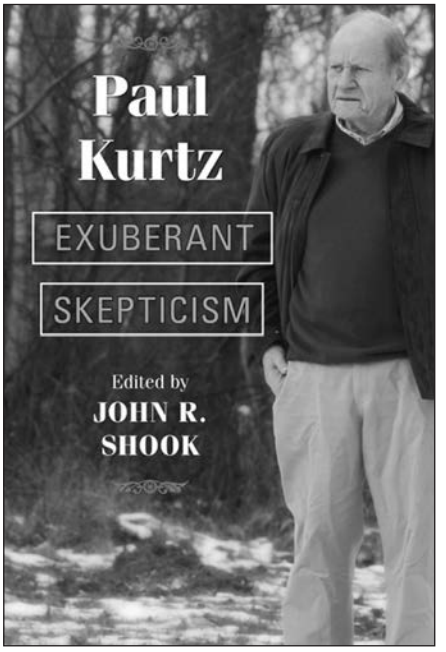
PETER LAMAL

Exuberant Skepticism. By Paul Kurtz. Edited by John R. Shook. Prometheus Books, Amherst, New York, 2010. ISBN: 978-1-59102-778-2. Paperback, $19.

This set of previously published writings by Paul Kurtz, spanning three decades, can serve as an invaluable introduction for those who are unfamiliar with contemporary skepticism. And there are doubtless many in that category. The first of *Exuberant Skepticism*'s four sections, "Reasons to Be Skeptical," asks what a skeptic is. The answer: a skeptic is a person who is willing to question any claim to truth and to test truth claims by the criteria described in this book and the work of other skeptics.

So, just what is skepticism? Kurtz identifies three varieties. Nihilistic skepticism is the complete rejection of all claims to truth or value; it claims there is no truth at all. Mitigated skepticism is the view that ultimate truths about what is real cannot be established with any certainty. The experiences of living require us to make some generalizations, but we cannot make any ultimate claims as to their truth. Kurtz calls the form of skepticism he champions *skeptical inquiry*. He says that, contrary to earlier forms of skepticism, skeptical inquiry is positive and constructive; it is an essential part of the process of inquiry but does not itself lead to unbelief.

Peter Lamal is an emeritus professor of psychology at the University of North Carolina–Charlotte and a fellow of the Division of Behavior Analysis of the American Psychological Association.



Skeptical inquiry maintains that we should never a priori refuse well-based investigation of claims. At the same time, when adequate justification for claims is not forthcoming, this form of skepticism will assert that such claims are unproved, unlikely, or false. "The key principle of skeptical inquiry is to seek, when feasible, adequate evidence and reasonable grounds for any claim to truth in any context" (p. 21).

How do we search for adequate evidence, and what are "reasonable grounds" for accepting truth claims? We search by means of the scientific method, and in the chapter "Scientific Method and Rational Skepticism," Kurtz describes what he considers its three important criteria: 1) collection of relevant evidence, 2) logical consistency, and 3) technological and experimental consequences.

The chapter "Skepticism and the New Enlightenment" maintains that in recent years there has been a massive retreat from Enlightenment ideals, exemplified by a worldwide resurgence of fundamentalist religions. The world needs a New Enlightenment whose distinctive characteristics would be: an extension of scientific methods and reason to all areas of human interest, a response to the existential question about the meaning of life, humanistic ethics as the basis for a new morality, and universal human rights.

The need for a New Enlightenment is also underscored by the growth of antiscience, and Kurtz describes ten kinds. One basic reason for the growth of antiscience is the failure to educate the public about the nature of science. It is time, Kurtz says, for scientists and the scientifically literate to come forward to explain what science is as well as its practical effects. Last July I pointed out in an article in the *Charlotte Observer*, "A Need to Engage the Public in Science," that according to a National Science Foundation report, science ranks behind ten other subjects in terms of people's interest. Politicians are an important part of the problem. By and large they reflect their constituents' and society's lack of interest in science. Following Chris Mooney and Sheril Kirshenbaum's proposal in their book *Unscientific America: How Scientific Illiteracy Threatens Our Future*, I pointed out that communicat-

ing the relevance of science to the public has been a low priority for scientists. Mooney and Kirshenbaum thus advocate development of a group of scientists who can be "ambassadors" to our larger society. A critical societal segment needing science education is, as Kurtz points out, the mass media.

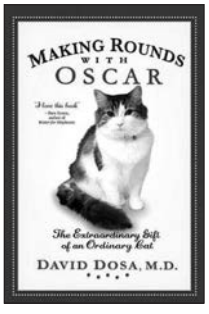
The book's second section, "Skepticism and the Nonnatural," consists of four chapters: one on skepticism and the paranormal and the other three on skepticism and religion, the last of which concerns the question of whether science and religion are compatible.

The third section, "Skepticism in the Human World," consists of a chapter concerning the need for skeptical inquiry in the political domain. Another chapter is devoted to skepticism and ethics. Kurtz describes three types of ethical skepticism. The one favored by Kurtz, ethical inquiry, "involves a skeptical component that is never fully abandoned" (131). And in this view, the basic subject matter of ethics is behavior. Moral faith and ethical skepticism are the focus of the next chapter, in which a modified form of ethical naturalism is proposed. In the last chapter in this section, Kurtz introduces a new field, eupraxsophy. Eupraxsophers will aim to be generalists able to understand, to the extent they can, what the sciences tell us. They will concern questions about the meaning of life and the relevance of the sciences and the arts to the choices we make. Universities and colleges need to develop the profession of eupraxsophy.

In the book's fourth section, "The Skeptical Movement, Past and Future," Kurtz recounts highlights of the new skepticism's history, including his most significant personal activity in developing the enterprise. The book's last chapter is a "Statement of Principles" of the new skepticism.

Those of us of a certain age can remember when any person known to be a skeptic was considered at least deranged and probably unpatriotic, if not dangerous. Because of the indefatigable work of Paul Kurtz and some others, however, I suspect that many skeptics feel less compelled to keep their views to themselves. This conjecture is, of course, subject to inquiry. Most anti-skeptics probably think of skepticism in the sense that emphasizes doubt and the impossibility of knowledge as opposed to the new skepticism, which focuses on inquiry and the real possibility of knowledge.

Parts of this book are understandably repetitious—after all, they concern some topics addressed over the course of thirty years. But this could be beneficial for those being introduced to skepticism. □



Oscar, the Death-Predicting Cat

JOE NICKELL

Making Rounds with Oscar: The Extraordinary Gift of an Ordinary Cat. By David Dosa. Hyperion, New York, 2010. ISBN: 978-4013-2323-3. 225 pp. Hardcover, $23.99.

Dr. David Dosa, a geriatrician, offers the remarkable notion that a Rhode Island nursing-home cat named Oscar has a predictive ability: knowing when a patient is about to die. Dosa's book, *Making Rounds with Oscar: The Extraordinary Gift of an Ordinary Cat* (2010), is based on an essay by Dosa that appeared in the *New England Journal of Medicine* (*NEJM*). It alleged that since staff members adopted him two years before, Oscar has "presided over the deaths of more than 25 residents" (Dosa 2007).

The *NEJM* piece was an *essay* and in no sense a scientific article, which raises questions about why it was published. If we expected the *book* to provide something resembling scientific evidence, we are again disappointed. Dosa seems primarily motivated to produce a sympathetic, insightful account about dementia patients, and there is nothing wrong—indeed, everything right—with that. (As one whose mother had Alzheimer's, I am, unfortunately, all too familiar with the heartbreaking issues involved, including the toll on family members. Until her death, I used my allotments of vacation time to travel across four states to be with my mother and invariably left the visits with tears streaming down my face.)

Enter Oscar the cat. Few would dispute that pets can provide therapeutic benefits to patients and family members. And there is little harm in ascribing human feelings and motives to the animal: a woman maintaining a vigil for her dying mother said, "[Oscar] was really there for me" (Dosa 2010, 188). (This ascription of human traits or feelings to objects, deities, or, in this case, animals, is known as anthropomorphism.)

However, it is another matter to ascribe magical powers to animals. A patient told Dosa, "Animals have this sixth sense and they can communicate with us if we understand their language." She claimed her own cat "always knew whenever I was sick or my arthritis was acting up. He would jump on my

Joe Nickell, CSI's senior research fellow, is author of numerous investigative books. His Web site is at www.joenickell.com.

bed and just sit with me" (21, 22). A woman whose father died said of Oscar, "This beautiful creature was sending us a sign" (149).

Dosa ventures possible explanations for the supposed phenomenon (68):

> When you consider it from a scientific point of view it's easy to shrug off suggestions that a cat can predict death. It's so much easier to say that he's just sitting with those patients because of the activity—the gathering of family, the holding of hands, the saying of good-byes. It just makes more sense. Or maybe he just likes to hang out with dying people because they don't bother him. Most cats sleep two thirds of the day anyway, so chances are a cat is going to be found on a warm bed somewhere.

Again, Dosa observes (217–218):

> As cells die, carbohydrates are degraded into many oxygenated compounds, including various types of ketones—chemical mixtures known for their fragrant aroma. . . . Could it be that Oscar simply smells an elevated level of a chemical compound released prior to death? It is certainly clear that animals have a refined sense of smell that goes well beyond that of the ordinary human.

However, he adds, "I like to think of Oscar as more than a ketone early-warning system."

Here we should note the cautionary principle known as Hyman's Categorical Imperative (after distinguished skeptic Ray Hyman [Alcock 1994, 89]): "Do not try to explain something until you are sure there is something to be explained." In the case of Oscar, the prescient cat, that certainty is far from having been established, as we shall see.

Dosa's thinking about Oscar was influenced by a nurse named Mary: "Nothing happens on the unit," he says, "without her knowing about it. Even her supervisors have been known to defer to her" (3). She possesses "intuition" and "always seems to know who actually needs the most attention" (6)—a quality projected onto Oscar. Throughout the book Mary declares her belief that "Oscar only spends time with patients who are about to die" (8), although some family members believe Oscar is there not for the dying but for the living. "I think he was there for *me*," one said. "In fact, I'm sure of it" (182).

Mary admits she also would "like to think" that there is something more to Oscar's alleged ability than, say, smell (64). Dosa reports that she "hated my *I'm a scientist* talk" (68) and that she concedes, "I'm a dyed-in-the-wool animal lover. It's not like I'm objective" (190). Yet Dosa singles her out in his acknowledgments, saying that it was she "who helped me collect many of the stories that appear in this book" (224).

Dosa's use of the word *stories* is instructive. His evidence is the kind disparaged in science as anecdotal. That is, it is based on personal narratives that may be affected by mistaken perceptions, faulty memory, folkloric influences, and many other faults.

Hearsay may creep in (as it has done regarding Oscar [e.g., 213]). Biased selection is a very real problem: there is a natural tendency for believers in some phenomenon to collect stories supporting it, just as there is for disbelievers to collect stories discrediting it. In 225 pages of text (relating some sixteen of Oscar's supposed successes), Dosa fails to mention a single instance of Oscar failing to predict death correctly; yet in a beginning note he begs readers to "forgive the occasional mistakes" the cat "makes from time to time."

Oscar's purported ability was first noted when he was just a kitten and jumped onto the bed of a patient who died later that day. But Oscar often came and went (and was generally characterized as going "in and out" of patients' rooms [181, 182]). Nevertheless, once people began "talking about Oscar," staff began collecting—even manipulating—the evidence. In at least one instance, the kitten was actually *placed in the bed of a dying man* (67). (Reportedly, Oscar ran away, only to return a day and a half later when the man really died.) One wonders, was Oscar placed or coaxed into rooms of other dying patients?

Moreover, Dosa admits that "for narrative purposes" he has "made some changes that depart from actual events" and that "some of the characters that appear in this book are composites of multiple patients" (v). In other words, there is no point in trying to evaluate the anecdotal evidence: it has been manipulated—in the interest of telling a good story, of course—so it is scientifically worthless.

Although Oscar takes his place among other alleged animal prodigies (Nickell 2002)—like the dog that supposedly knew when her owner was coming home (Wiseman et al. 1998)—Dosa's own assessment at the end of his suggestive book is quite equivocal (219):

> I don't really pretend to know the nature of Oscar's special gift—I am not an animal behaviorist nor have I rigorously studied the why and how of his behavior. Whether he is motivated by a refined sense of smell, a special empathy, or something entirely different—your guess is as good as mine.

Oh, I didn't know we were just guessing. My guess is that Oscar is a magnet for fuzzy thinking. □

Acknowledgments

I am grateful for research assistance from CFI Libraries Director Tim Binga, as well as my wife, Diana Harris.

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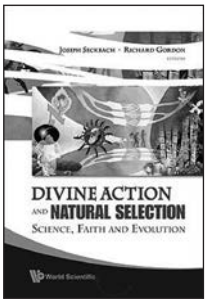


Dialoguing on a Philosophical Divide

LIZ STILLWAGGON SWAN

Divine Action and Natural Selection: Science, Faith, and Evolution. Edited by Joseph Seckbach and Richard Gordon. World Scientific, Hackensack, New Jersey, 2008. 1,124 pp. Hardcover, $99; softcover, $65.

Do you believe that the universe and everything in it, including us, could have come about through the slow accumulation of changes from undirected processes, or do you believe that there must be an intelligence behind it all? This question is the essence of the evolution/creation/intelligent design (E/C/ID) debate and the very question that divided Charles Darwin and Alfred Russel Wallace, the two men who independently but simultaneously articulated the theory of evolution. While both thinkers advocated the gradual evolution of life by natural selection, Wallace was not convinced that the theory of evolution on its own could explain the emergence of human intelligence. *Divine Action and Natural Selection* explores this philosophical divide in a discussion among nearly fifty thinkers who argue their views in accessible ten- to twenty-page essays that are followed by informal dialogue between commentators and the authors.

As a philosopher of science who is committed to naturalistic explanations of life and mind, I have always kept the E/C/ID debate at a safe distance. But questions concerning the origins of life and the self-organization, design, and (contentious) *telos* in nature remain open questions in science, and an implicit theme of the volume is that we would do well to be on the lookout for the best possible explanations, whatever their source.

The volume is divided into nine parts, including "Background in Theology, Philosophy and Science," "Towards Harmony Between Science and Religion," "A Dialogue Between Faith and Reason," "Science Curricula in Schools of Various Countries," "Are There Possible Avenues Towards Convergence?" and "Intelligent Life in the Universe and Divine Action." The volume's authors are natural scientists, theoretical scientists, philosophers of science, philosophers of religion, rabbis, creationists, science writers, technology entrepreneurs, and others who defy easy categorization. The dialogue format makes it an exciting read; the experience is less like reading a book and more like being in the audience of a lively talk show.

Richard Gordon (theoretical biologist and co-editor of the book) contributes an essay titled "Over-Confident Anti-Creationists versus Over-Confident Creationists." One can infer that Oktar Babuna (neurosurgeon, creationist) could be classified as an "over-confident creationist," as he ends his own contribution to the volume with this: "At the beginning of the 21st century, science offers but one answer to the question of the origin of life: Creation." In the follow-up dialogue of his own essay, Gordon says this about creationists: "By causing us to focus intently on the gaps they find, our thinking about what constitutes an explanation that might fill those gaps is sharpened." Baruch de Spinoza, for one, would have endorsed this kind of approach; his insight that those ruled by reason could coexist with those ruled by faith was a conclusion arrived at only after the most thorough analysis of biblical scripture. He recognized that different human constitutions were moved by different means to live rightly and thus allowed that faith and religion served a necessary role in the human world. *Divine Action and Natural Selection* is a project undertaken in this same liberal spirit of calling all willing participants to the table for lively discussion and, it is hoped, some convergence between science and faith.

Where else would you find a technology entrepreneur (Steve McGrew, president of New Light Industries, Ltd.) and a Christian philosopher (Ernan McMullin, Notre Dame) arguing over the meaning of words such as *knowledge*, *purpose*, and *faith*? Also included is an essay by Seth Shostak (senior astronomer at SETI Institute) on how intelligent design theories bear on the future of space science. Physicist Richard Feynman famously quipped, "What I cannot create, I do not understand." Tom Barbalet (software designer) takes this creative approach to understanding design in his essay "Welcome to the Simulation." Many different views on how complexity in nature, including human intelligence, emerged are explored and argued in the volume.

This volume should be a mainstay of research institutes and think tanks on all sides of the issue. Because of its size (over 1,100 pages), it lends itself to use as a reference book with easy access to plenty of articles from many points of view. The volume will be a nice addition to the library of researchers working in this area, and it could be used as a textbook for advanced undergraduate and graduate courses in the history or philosophy of religion, theology, metaphysics, history and philosophy of science, or special topics courses on the E/C/ID issue.

Divine Action and Natural Selection provides a model for fostering dialogue and collaboration across the divide instead of fueling the already charged con-

Liz Stillwaggon Swan was the 2007 Jo Ann Boydston Naturalism Fellow at the Center for Inquiry/Transnational, where she finished writing her dissertation. She received a PhD in philosophy from the University of South Carolina in 2008 and currently teaches philosophy at the University of Colorado. She publishes in biophilosophy and neurophilosophy and is interested in the evolution of life and mind.

troversy surrounding the issue. Noam Chomsky has a long history of making people uncomfortable with his unwavering commitment to liberal thinking, which does *not* mean adopting a liberal agenda—or any agenda, for that matter. Instead, it means being open to really hearing the other side—a principle that holds true no matter what side you are on. In this spirit, I commend the volume editors for taking on this laudable project and publicly setting a precedent for how open-minded, intelligent, and progressive debate on sensitive topics of public, academic, and educational import should go. The volume, ultimately, is not about taking sides but about exposing the reader to a large collection of different viewpoints to facilitate her own critical thinking on the issue. As scientists Julian Chela-Flores (astrobiologist) and Joseph Seckbach (extreme habitat astrobiologist, volume co-editor) write in their concluding chapter: "It is of paramount importance for non-scientists to understand that we do not consider science as the ultimate truth, or a cultural sector that has the monopoly on wisdom. Science is an activity whose main strength is that it invites arguments to improve itself." □

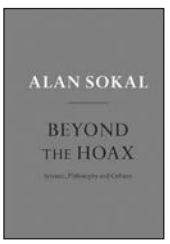
Acknowledgment

Many thanks to my former philosophy student Curtis Metcalfe for insightful dialogue and pointed questions in the writing of this review.

NEW BOOKS

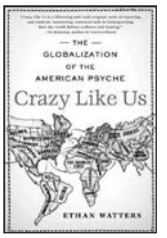
Listing does not preclude future review.

BEYOND THE HOAX: Science, Philosophy, and Culture. Alan Sokal. Oxford University Press, New York, 2010. 488 pp. Softcover, $24.95. When well-respected physicist Alan Sokal submitted an article titled "Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity" to *Social Text*, a leading journal of cultural studies, the piece was accepted without question. The article, published in 1996, was in fact filled with academic jargon and nonsensical, pseudo-intellectual gibberish, a parody of postmodernism and philosophical relativism. "I intentionally wrote the article so that any competent physicist or mathematician (or undergraduate physics or math major) would realize it was a spoof," Sokal said. The *Social Text* editors didn't, and the hoax exposed an Ivory Tower emperor without clothes. *Beyond the Hoax* is Sokal's follow-up and analysis of the controversy and the scandal it caused in academia, complete with an annotated version of the original parody and responses from the *Social Text* editors. —B.R.

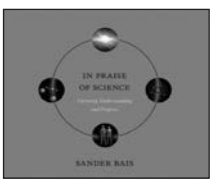


BIOGRAPHIES OF DISEASES SERIES. Edited by William and Helen Bynum. Oxford University Press, New York, 2009. Hardcover, $24.95. Each volume in the new Biographies of Diseases series from Oxford is written by an expert historian of medicine and tells the story of a particular disease throughout history (e.g., asthma, cholera, diabetes, and hysteria). The material on the evolving understanding of the natures of the diseases—as well as their treatments—is to be expected, but the authors also provide a fascinating look at the social and cultural contexts of these maladies. The authors describe the cultural attitudes toward the diseases, as well as the men and women who struggled to cure them with the limited technologies of the day. This is a fascinating series for those interested in epidemiology and the history of medicine. —B.R.

CRAZY LIKE US: The Globalization of the American Psyche. Ethan Watters. Free Press, New York, 2010. 255 pp. Hardcover, $26. The author of *Making Monsters*, which took on the recovered memory movement, addresses how American culture is "homogenizing the way the world goes mad." Ethan Watters shows that we are not only changing the way the world treats mental illness and madness, but we are also changing the symptoms and prevalence of the diseases themselves. Learning from the U.S. experience, for example, Japanese drug companies are selling depression itself to create a market for new drugs. Watters travels the world to reveal other ways in which Western influences have changed mental illness. —K.F.



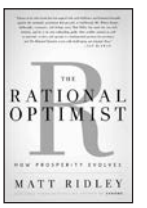
IN PRAISE OF SCIENCE: Curiosity, Understanding, and Progress. Sander Bais. MIT Press, Cambridge, Massachusetts, 2010. 192 pp. Hardcover, $24.95/£18.95. This beautifully produced book emphasizes the unity and connectivity of the natural sciences. Author Sander Bais is a professor of theoretical physics at the University of Amsterdam and an external faculty member at the Santa Fe Institute. He seeks here to help us bridge the gaps between artistic and scientific thinking. An opening section touts wonder and curiosity as a route to liberation from prejudice, pseudoscience, and parochial worldviews. A second part focuses on what drives "the robust knowledge-generating system" of science and scientists in "their unique collective effort to understand the world outside and inside us." He goes on to deal with great turning points in our understanding of nature and then to their impact on the human condition and the human state of mind. A final section focuses on the pursuit of truth, and there is an epilogue on scientific modesty. Classic paintings and illustrations plus specially created color art illustrating "circle of science" connectivities between ideas and concepts are featured. Culture and science both "are sublime products of the human mind," writes Bais. Together they create civilization. —K.F.



IS THAT A FACT? Mark Battersby. Broadview Press, Peterborough, Ontario, Canada, 2009. 232 pp. Softcover, $24.95 (U.S. and Canada). A practical guide to thinking critically about scientific and statistical information. Battersby writes clearly and simply, gives abundant examples, and covers all the territory. Illustrated with graphs and cartoons, his book is a useful guide to the thoughtful and critical use of statistics and scientific information. —K.F.

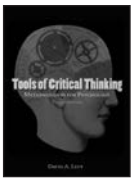
ON MONSTERS: An Unnatural History of Our Worst Fears. Stephen T. Asma. Oxford University Press, New York, 2009. 368 pp. Hardcover, $27.95. Stephen T. Asma, a professor of philosophy at Columbia College Chicago, explores the history of monsters and how the public's idea of monsters has changed over time. Asma's conception of monsters is broad and includes everything from stereotypical monsters seen in Hollywood films to freak shows to demons and devils. Asma approaches monsters from philosophical, social, psychological, and historical perspectives, leading to intriguing questions such as whether they have souls. Chapters include "The Medicalization of Monsters," "Darwin's Mutants," "Torturers, Terrorists, and Zombies," "Biblical Monsters," and "Criminal Monsters." *On Monsters* is one of the rare in-depth, scholarly treatments of the topic. Asma's pervious books include *Stuffed Animals and Pickled Heads: The Culture and Evolution of Natural History Museums*. —B.R.

THE RATIONAL OPTIMIST: How Prosperity Evolves. Matt Ridley. HarperCollins, New York, 2010. 438 pp. Hardcover, $26.99. The news hourly hammers us about our economic and political problems and the lowly state of the world. So it is good to be reminded that in any rational long-term historical perspective, we've never had it so good. That's what British science writer Ridley does masterfully in this book. Since 1800 the world population has multiplied six times, yet

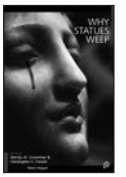


average life expectancy has more than doubled and real income has increased more than nine times. On a shorter scale, just since 1955 ("itself not a time of deprivation"), writes Ridley, "the average human being on Planet Earth earned three times as much money (corrected for inflation), ate one-third more calories of food, buried one-third as many of her children, and could expect to live one-third longer." And while the rich have gotten richer, he says, "the poor have done even better." Today's people are "richer, healthier, taller, longer-lived, [and] freer" than ever before, Ridley maintains, and he goes on to elaborate and defend this thesis, explain it in evolutionary terms, and look critically at today's leading "pessimisms"—all in lively, readable fashion. —K.F.

TOOLS OF CRITICAL THINKING: Metathoughts for Psychology, Second Edition. David A. Levy. Foreword by Thomas Szasz. Waveland Press (www.waveland.com), Long Grove, Illinois, 2010. 298 pp. Softcover, $37.95. A welcome new edition of a much-praised, well-organized, readable teaching guide to critical thinking—perhaps the core unifying theme of the skeptical movement. Levy, a psychology professor at Pepperdine University, agreeably puts together what any student of psychology or would-be wielder of the tools of critical thinking needs. The naturalistic fallacy, Barnum effect, correlation-causation confusions, "spectacular explanation" fallacy (extraordinary events do not require extraordinary causes), assimilation bias, confirmation bias, belief perseverance effect, hindsight bias, availability bias, insight fallacy—these and much more are discussed here in succinct and attractive form. —K.F.

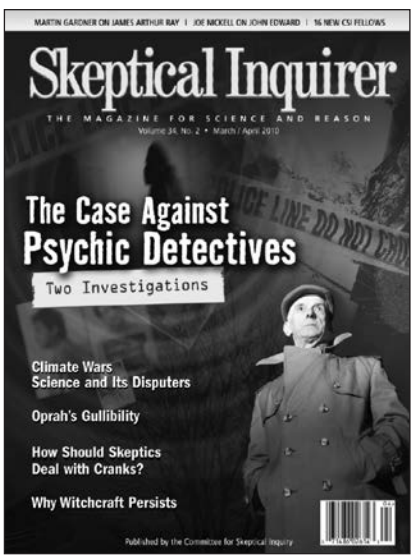


WHY STATUES WEEP. Edited by Wendy M. Grossman and Christopher C. French. The Philosophy Press, London, 2010. 204 pp. Softcover, £12.99. Since 1987 the quarterly magazine *The Skeptic* has been doing in the U.K. what the SKEPTICAL INQUIRER has been doing in the U.S. and around the world. Written and edited in the U.K. (but now published by our Committee for Skeptical Inquiry), *The Skeptic* is dedicated to the examination of science, scepticism (the British spelling), psychology, secularism, critical thinking, and claims of the paranormal—in short, the pursuit of truth through reason and evidence. This welcome collection brings together the best articles from the magazine's archive in one lively volume. It covers a wide range of topics such as psychic fraudsters, claims of psychic healing and alien abductions, near-death experiences, false memories, miracle claims, untested medical remedies, weeping statues, and much more. Contributors include Susan Blackmore, Richard Wiseman, John Diamond, Edzard Ernst, Lewis Jones, Gerald Woerlee, and the editors. With a foreword by Simon Hoggart. Highly recommended. —K.F.



—Kendrick Frazier and Benjamin Radford

LETTERS TO THE EDITOR



Editor's Note*: Letters about the four Climate Wars pieces in our March/April 2010 issue appear in the Follow-up section on pages 50–56.*

How to Deal with Cranks

I enjoyed reading Martin Bridgstock's article on dealing with letters from the people he calls "dissenters" ("Encounters with Aliens [the Local Kind]," SI, March/April 2010).

Isaac Asimov, who wrote both science and science fiction, probably had even more problems with such people. He once wrote an article somewhat similar to Bridgstock's. I regret that I cannot recall the source, but what I remember of two of Asimov's methods might be of interest to your readers.

One suggestion was to respond pretending to be your own secretary. First the "secretary" would disclaim the ability to understand the dissenter's letter. Then the secretary would write an assurance that if you (the dissenter's target) became once again able to deal with your mail within the next few months, the dissenter's letter would be one of the items delivered to you for your consideration. This leaves the dissenter pondering just what might have happened. Did you suffer severe brain damage, or did you retire to a monastery in Tibet? Further correspondence, Asimov felt, would be unlikely.

The second suggestion was to prepare a brief *handwritten* letter with such poor penmanship that not even a single word could be understood. This idea possibly goes back to Mark Twain's book *Roughing It*, Chapter 70.

Although dealing with too many dissenters must be distasteful, I still feel a bit wistful. I am such an unknown that probably not even a single dissenter will ever dump on me.

Philip McEvoy
philipmcevoy@live.com

I deeply sympathize with the problem Martin Bridgstock is trying to address with "Encounters with Aliens." His suggestion for us to claim incompetence in the field sounds great. I am eager to try it out.

However, I feel the diagnosis and some recommendations are not up to CSI's usual standards. I'd prefer that we encourage rational argument based on evidence.

As tempting as it may be, I am alarmed at the implication to use ad hominem references—however annoyingly the dissenter behaves.

The temptation to categorize people as cranks for using "Howlers, Hijacking, and Hurtfullness" rather than addressing their arguments is itself a form of hurtfulness, and because it doesn't address their issues, doesn't that fit his own definition of hijacking?

The history of science has an embarrassing surplus of "mainstream science ideas" that were overturned. Aether, phlogiston, Ptolemaic motion, and N-rays come to mind. Apparently N-rays were "confirmed" by some 120 scientists in 300 published articles.

Were those who questioned Ptolemaic motion or N-rays cranks?

Calmly explaining the criteria for a scientific hypothesis and holding their claims up to them can educate rather than denigrate.

I urge that we address dissenters by respectfully explaining how science really works. Perhaps we can gain some enthusiastic converts as allies.

David Dilworth
Carmel, California

Martin Bridgstock responds:

Like David Dilworth, I am all in favor of spreading rationality and knowledge wherever we can. The point of my paper is that where people

seem incapable of grasping such ideas, our time is best spent on other activities, such as communicating with people who are likely to benefit. Judging by Philip McEvoy's letter, Isaac Asimov had reached the same conclusion as I have.

The methods I suggest do work, in that they will usually stop the nuisance activity. If Dilworth has methods that demonstrably work, in the sense of educating these dissenters, then I invite him to share them with the skeptical community. They will be a real breakthrough.

Every skeptic knows that scientific theories have often been overthrown. That is why skepticism is about "investigation" and not "debunking." However, for every misunderstood genius there are thousands upon thousands of people who will soak up your time and energy and give nothing in return. I gave some criteria for distinguishing between the two. If there are better criteria, then I invite Dilworth, or anyone else, to contribute them.

Oprah's Gullibility

The article by Martin Gardner about Oprah Winfrey (SI, March/April 2010) was particularly enlightening. Not being a fan of Oprah or her show, I did not realize the type of misinformation she was promoting. It's sad that someone so beloved by so many and who has the power to do so much good lends her name to so much quackery and untruthfulness. What a better world it would be if she would use her fame and fortune to denounce this kind of silliness. It is even more appropriate that the next page at the end of the article is a review of the book *Idiot America* by Charles Pierce. Very appropriate.

Jim Phillips
Newcastle, Wyoming

Grandma's Chromosomes

Kenneth W. Krause's "Science Watch" column "An Eye for the Ladies" (SI, March/April 2010) relates that a recent paper, "Grandma Plays Favorites," offers strong evidence that paternal grandmothers "decrease a boy's chance of survivorship." Michael Balter, in *Science*NOW, says about the same article, "Thus paternal grandmothers were most beneficial to the survival of their granddaughters and least beneficial to the survival of their grandsons, while maternal grandmothers showed an intermediate effectiveness." I'd say that's a pretty big difference.

Even so, as a paternal grandmother living with my son and his family, including a two-year-old grandson and a four-year-old granddaughter, am I to believe that the presence of an X chromosome, or lack thereof, has such a tremendous effect on me that I will unconsciously discriminate between my granddaughter and grandson, without my knowledge or the ability to control my actions? If this is the case, how can reason or logic be of any use to us? How can anyone complain about people who believe in pseudoscience if a person who believes in logic and reason is unable to control her actions toward two people whom she adores because one has her X chromosome and one does not?

Then again, in the same issue, Peter Lamal has a book review of *50 Great Myths of Popular Psychology: Shattering Widespread Misconceptions about Human Behavior* written by Scott O. Lilienfield, et al. He lists ten causes of myths, number 4 of which is "Inferring causation from correlation." Hmm. Maybe we should wait twenty years for more research on this before we jump to any conclusions about the effect of X chromosomes in grandchildren on the behavior of paternal grandmothers.

Chris Pryor
Henrico, Virginia

Kenneth W. Krause responds:

Chris Pryor's much appreciated comments focus bright lights on several frequently raised scientific issues. I'll address them in the order given.

Though a fine science journalist, Michael Balter didn't participate in Knapp's study either as a scientist or as a subject. Thus, his news report is extraneous. More central is the original, peer-reviewed paper from the Proceedings of the Royal Society B. *Therein, Leslie Knapp's international and multidisciplinary team announced its results unambiguously: "In all seven populations, boys survive better in the presence of MGMs [maternal grandmothers] than PGMs [paternal grandmothers]. . . . All of the populations exhibit a detrimental effect of PGMs on boys. . . . Additionally, in seven out of seven populations, PGMs had a negative effect on grandsons, and in six out of the seven populations, PGMs had a positive effect on granddaughters."*

Of course Knapp's paper said nothing about grandmothers who did not take part in her study. So clearly Pryor and her family are not directly implicated. But, arguendo*, if Knapp's "X-linked grandmother hypothesis" is applicable to Pryor, she would likely remain oblivious to her differential treatment and might very well pen a letter to the editor entirely indistinguishable from the foregoing.*

Regardless, Pryor's anxiety over genetic determinism and lack of conscious personal control is a more interesting and difficult problem. First, informed geneticists would never claim that genes alone predetermine complex human behaviors. Environment, they agree, is at least equally contributive. Second, our genome provides humans with a talent for reason in addition to a capacity for irrational behavior. Thus, a person's intellectual environment can affect her tendency toward a range of behaviors, including reason and its more primitive emotional counterparts. As we know, publications like SI endeavor to create and maintain a more positive intellectual environment for their readers and, given humanity's evolved capacity to learn and adapt, I believe they can be successful in doing so.

Pryor was also correct to highlight the essential topic of scientific provisionality. Though impressive, Knapp's hypothesis—like all others—is subject to future revision or even invalidation. Then again, we should never ignore or criticize results merely because they leave us feeling uncomfortable.

Wiseman Nullifies Positive Results?

Psychologist Richard Wiseman is a well-known British critic of parapsychology, frequently appearing in the British media to "debunk" psychic research. I would like to respond to some of the criticisms Wiseman advances in his recent SKEPTICAL INQUIRER article "'Heads I Win, Tails You Lose': How Parapsychologists Nullify Null Results" (January/February 2010) and then demonstrate how, on at least one occasion, Wiseman has nullified *positive* results of a series of parapsychology experiments.

Wiseman begins by writing: "Parapsychologists have tended to view positive results as supportive of the psi hypothesis while ensuring that null results don't count as evidence against it" (p. 36). This, however, is committing the fallacy of confusing *absence of evidence* with *evidence of absence*. The fact that we fail to observe positive results for a phenomenon in any individual experiment does not count as evidence that the phenomenon in question does not exist. Individual experiments may fail to show positive results for any number of reasons: the experiment may not have been performed properly, the sample size chosen may have been too small to reveal statistically significant effects, and so on. With psi we have the added complication that we are dealing with a purported human ability, and few human

abilities are perfectly replicable on demand. To use a baseball analogy, home runs are not perfectly replicable on demand, but that does not mean that home runs do not exist. And our failure to observe even a single home run at an individual baseball game does *not* count as evidence that home runs do not exist.

Before we come to the conclusion that "psi does not exist," we must consider *the data as a whole*. In practice, this means employing the widely used statistical technique of meta-analysis, in which the data from several experiments of the same type are combined and then analyzed as a whole.

In fact, Richard Wiseman is familiar with this technique and has used it himself to conduct a meta-analysis of the results from thirty ganzfeld psi experiments. He mentions this study on page 38: "In 1999 Milton and Wiseman published a meta-analysis of all ganzfeld studies that were begun after 1987 and published by the start of 1997, and they noted that the cumulative effect was both small and nonsignificant."

But what Wiseman does not mention is this: it later turned out that Milton and Wiseman had botched their statistical analysis of the ganzfeld experiments by failing to consider sample size. Dean Radin simply added up the total number of hits and trials conducted in those thirty studies (the statistically correct method of doing a meta-analysis) and found a statistically significant result with odds against chance of about 20 to 1 (Radin 2007, 118, 316).

The thirty studies that Milton and Wiseman considered ranged in size from four to one hundred trials, but they used a statistical method that simply ignored sample size (N). For instance, say we have three studies, two with $N = 8$, two hits (25 percent), and a third with $N = 60$, twenty-one hits (35 percent). If we ignore sample size, then the unweighted average percentage of hits is only 28 percent; but the *combined* average of all the hits is just under 33 percent. This, in simplest terms, is the mistake they made. Had they simply added up the hits and misses and then performed a simple one-tailed t-test, they would have found results significant at the 5 percent level. Had they performed the exact binomial test, the results would have been significant at less than the 4 percent level, with odds against chance of 26 to 1. Statistician Jessica Utts pointed this out at a meeting Dean Radin held in Vancouver in 2007, in which he invited parapsychologists and skeptics to come together and hold presentations for other interested scientists. Richard Wiseman was present at this meeting but was unable to offer any rational justification for his botched statistics.

Strangely, Wiseman made no mention of the flawed statistical analysis in his SKEPTICAL INQUIRER article and merely wrote that "the cumulative effect was small and insignificant."

And this was not the only problem with the study. Milton and Wiseman did not include a large and highly successful study by Kathy Dalton (1997) due to an arbitrary cut-off date, even though it was published almost two years before Milton and Wiseman's paper, had been widely discussed among parapsychologists, was part of a doctoral dissertation at Julie Milton's university, and was presented at a conference *chaired by Wiseman* two years before Milton and Wiseman published their paper.

Here we have a case in which Wiseman *nullified a positive result* by first arbitrarily excluding a large and highly successful study and then by botching the statistical analysis.

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Chris Carter
Author of *Parapsychology and the Skeptics*

Richard Wiseman responds:

Chris Carter's letter provides an excellent example of exactly what is wrong with present-day parapsychology. In 1999 I coauthored a meta-analysis of ganzfeld telepathy studies that had been conducted between 1987 and February 1997. This analysis followed other meta-analyses that had examined earlier sets of ganzfeld studies and obtained evidence of highly significant effects. Our meta-analyses did not reveal any evidence of a significant effect. The "heads I win, tails you lose" procedures kicked in. Some parapsychologists suggested that our analysis should have used a different statistical procedure (even though they had never criticized the earlier meta-analyses, despite them using exactly the same procedure) or that studies conducted after our analysis should be added (thus defeating the entire notion of having a cut-off point). Some parapsychologists searched the data-set for pockets of significant studies (see the analyses by Palmer, Bem, and Broughton described in my original article). In short, they showed exactly the type of reluctance to embrace the null hypothesis that I describe in my article. If Chris Carter and others are confident that psi effects are genuine, then I invite them to organize a prospective meta-analysis in which the types of studies, cut-off points, and analyses are pre-specified in advance of the studies being conducted. Any failure to do so will reveal a great deal about their true level of confidence in such effects.

Moral Facts?

The recent debate between Massimo Pigliucci ("The Moral Duty of a Skeptic," SI, November/December 2009) and David Kessler (Letters, SI, March/April 2010) over the existence of "moral facts" is surprising to find in the pages of SI. The surprise for me is in Pigliucci's eventual admission that he subscribes to a "virtue ethics view of the world."

Most prominent skeptics assume a cluster of highly consistent philosophical positions, generally including atheism or agnosticism, hard determinism, materialism, empiricism, moral relativism or consequentialism/utilitarianism, humanism, naturalism, and logical positivism. In this worldview, as Kessler points out, moral facts "do not exist outside human thought." Pigliucci claims they "are arrived at—in ethical philosophy—by reason, not by observation." He *just knows*, for example, that seeking the truth is always the right thing to do. But claims as to what are moral facts have varied wildly, and 4,000 years of just reasoning about them have gotten us precisely nowhere. We should have been empirical in our search for them all along.

Pigliucci ponders that "moral rules may be more akin to logical propositions or mathematical theorems." But the above record shows that moral facts are a human construction to be detected empirically. He indirectly admits this by nowhere justifying virtue ethics by showing how truth or knowledge are virtues in and of themselves but several times appealing to consequentialist/utilitarian arguments, such as "It is indeed important to thoughtfully consider . . . whether our single-minded search for truth . . . ends up doing more ill than good."

With the expanding ability that we now have to objectively study humanity, its desires, and its means to achieve these—something acknowledged by Pigliucci—hopefully we will be less often waylaid or even hijacked by powerful individuals who *just know* what is right for us.

Gary Bakker
Launceston, Tasmania,
Australia

Gödel's Theorem

I was disappointed to see Massimo Pigliucci misunderstand Gödel's incompleteness theorem in his response to Dr. Kessler's letter in your March/April 2010 issue. The theorem proves that under a sufficiently complex system of premises, there will be some truths about the system that can't be proved logically from the premises. It says nothing about the truth of the premises. It's important for skeptics to understand this theorem because it's often inaccurately used to justify blind faith or intuition.

R. Allen Gilliam
Winter Park, Florida

Massimo Pigliucci responds to Bakker and Gilliam:

Bakker is surprised to see a skeptic endorsing a version of virtue ethics, but I am surprised at his surprise, given the existence of books by humanists on virtue ethics, for example Richard Taylor's Virtue Ethics: An Introduction *(Prometheus).*

Moreover, there is nothing particularly "consistent" between atheism and any given school of thought in ethics, and some of the schools mentioned by Bakker—particularly moral relativism and consequentialism—are most certainly not logically consistent with each other.

As for the existence of "moral facts," of course they are not facts in any empirical sense of the term, hence my analogy (and it was only an analogy, not an equivalency) with mathematics: numbers do not "exist" as independent facts, but one cannot thereby conclude that they are arbitrary human constructs.

My reference to the consideration of whether skeptical inquiry leads to more ill than good was simply motivated by the fact that there are contrasting ethical demands at play here, where the search for truth (which I consider of high ethical value) may clash with other values (such as compassion for fellow human beings, regardless of whatever irrational notion they may entertain). There is no contradiction between claiming that ethics is not (entirely) a matter of empirical facts while also arguing for consideration of whatever facts inform us about the actual human condition.

As for Bakker's final comment about society being hijacked by individuals who "just know" what is right for us, I would argue that a combination of science and philosophy is precisely the right antidote against that possibility, while science alone has all too often failed us in that respect (think of eugenics).

As for Gilliam's impression that I misunderstood Gödel's theorem, I do not see on what such impression is based. I would agree with Gilliam's summary of the significance of the theorem, which is precisely in line with my arguments about the incompleteness of logical systems. However, I certainly never implied that such incompleteness somehow "justifies blind faith." As for intuition, it is not at all a form of faith but, as recent research in cognitive science shows, a subconscious form of information processing by the brain. Often, but not always, it results in correct educated guesses on how to solve a particular problem, guesses that are not apparently arrived at through the type of linear logical thinking associated with conscious deliberation.

I Really Don't Know What I Saw

Last night I was cruising through the channels when I came face to face with James Fox's television show *I Know What I Saw*. Herein was packaged many, if not most, of the typical tricks of false logic wound up in the sincerity of authoritative eyewitnesses and the shallow dismissal of skeptical critics. To elaborate on all of these pitfalls and seductions would take a documentary in itself.

Purportedly appealing to some scientific credibility, it used the appeal to authority to authenticate the supposed close encounters. We saw astronauts, generals, pilots, and even a president recounting their experiences. If these people see UFOs, surely they must be real! However, it was precisely against the assertion by authority that science began in the first place, and "*nulla in verb*" remains the motto of the first ever formal scientific society. To utilize authority in this fashion is disingenuous unless the goal of the program is simply ratings. It is not disputed that many of these professional individuals perceived some strange visual (and potentially tactile) event, but quite clearly most of these people are the first to admit that they don't "know what they saw." Most apparently, what were recounted were perceptual experiences, yet no perceptual psychologist or vision scientist was featured. If these are anomalies and represent the very edge of normal perception or *peri-normal* rather than *paranormal* phenomena, then the neurosciences and the experimental and empirical elements of the psychological sciences need to be very much to the fore. Tellingly, in Fox's treatment such individuals were patently missing. Neither were the very brief flashes of skeptics who appeared only in momentary and derogatory clips indicative of the vast body of more rationale information concerning some of the more prominent reports featured.

If this program, and the clever but intrinsically deceptive fashion in which it was presented, is the only source of information the great American public receives, it is little wonder that many people believe in extraterrestrial visitations. Herein, the blame lies not with the public but elsewhere. And strangely, I believe the blame lies with the skeptical community. Where are our documentaries that debunk such confabulations? Why are we not prominently featured on the Science Channel, the Discovery Channel, etc.? Why is the truth of a situation not capable of being communicated as intriguingly and entertainingly as these outlandish and often explicitly sensation-seeking presentations? It is apparent we are in a fight, and irrationality is winning.

P.A. Hancock
Provost Distinguished
Research Professor
Univ. of Central Florida

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Science Channel Refuses To Dumb Down Science Any Further

SILVER SPRING, MD—Frustrated by continued demands from viewers for more awesome and extreme programming, Science Channel president Clark Bunting told reporters Tuesday that his cable network was "completely incapable" of watering down science any further than it already had.

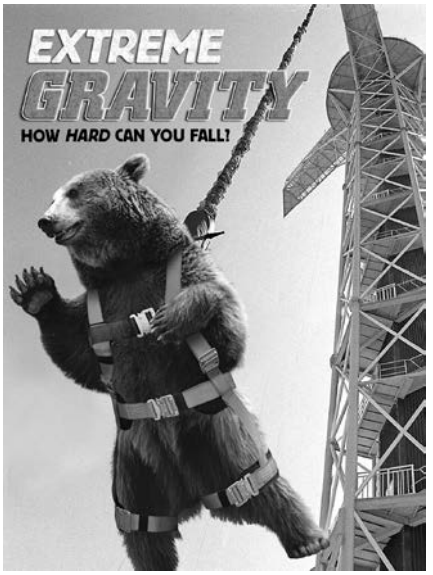
"Look, we've tried, we really have, but it's simply not possible to set the bar any lower," said a visibly exhausted Bunting, adding that he "could not in good conscience" make science any more mindless or insultingly juvenile. "We already have a show called *Really Big Things*, which is just ridiculous if you think about it, and one called *Heavy Metal Taskforce*, which I guess deals with science on some distant level, though I don't know what it is. Plus, there's *Punkin Chunkin*."

"*Punkin Chunkin*, for Christ's sake," added Bunting, referring to the popular program in which contestants launch oversized pumpkins into the air using catapults. "What more do you people want?"

Along with Bunting's remarks, the Science Channel issued a statement claiming that it currently airs more than 150 programming hours that are tangentially, and often laughably, related to science, and that staff members are unable to bring themselves to make those hours even more asinine.

Debbie Myers, general manager of the Science Channel, said the cable station has maintained a balance of 5 percent science content and 95 percent mind-numbing drivel over the past few years, and that this was as far as they were willing to go.

"At this point, having the word 'how' in a show's title is about as close to scientific investigation as we get," Myers said. "In fact, I don't even know how we can justify airing a show like *Mantracker* at all. A cowboy hunts contestants down using his trailing skills? I guess you could say it makes the audience use 'observation' by watching what happens on screen."



Test audiences responded poorly to the show's "overly-scientific" method of dropping a bear 300 feet.

An ad for the Science Channel's easy-to-pronounce gourd-launching show, *Punkin Chunkin*

"Observation is a part of science, right?" Myers added. "Jesus Christ."

A survey of the network's current schedule confirmed Monday that on-air demonstrations of such basic scientific principles as "inertia" and "momentum" are mostly relegated to pushing a blindfolded participant strapped to an office chair down a steep hill, while other concepts, such as "sublimation," are regularly demonstrated by strapping dynamite to a large fiberglass Big Boy statue and then watching it explode.

As evidence of their refusal to further water down programming, network sources pointed to a number of proposed shows they've abandoned in recent weeks, including an animal-based bungee-jumping program called *Extreme Gravity*, and *Atom Smashers*, a series that was was roundly rejected by focus groups as being "too technical" and "not awesome enough."

"People liked that the particle accelerators were really huge, but apparently the show didn't have enough smashing to hold their interest," said a former employee who wished to remain anonymous. "In the end, it was either add a huge monster truck for no reason whatsoever or pull the plug on the entire project. Honestly, I don't think I'd be able to face my wife and children had we gone through with it."

While they won't be dumbing down their already crude lineup of shows, Science Channel officials assured viewers that the network will continue to cater to the lowest common denominator and will keep airing embarrassingly base content completely stripped of all intellectual integrity. Officials also noted that the cable channel greatly values the 18-to-45-year-old demographic of louts, clods, and empty-headed dumb fucks.

"I don't like it when the science people talk about things no one can even understand," said Rich Parker, an Ohio resident. "It's like, just quit your yapping and dip the chain saw into the liquid nitrogen already."

David Zaslav, CEO of the network's parent company, Discovery Communications, said he has not ruled out rebranding the Science Channel as the Stuff Channel.

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Note: The Hidden Messages puzzle will return in the next issue.

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OREGON. Oregonians for Science and Reason (O4SR) Oregon. Jeanine DeNoma, president. Tel.: (541) 745-5026; e-mail: wilkinsa@peak.org; 39105 Military Rd., Monmouth, OR 97361 US. Web site: www.04SR.org.

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WASHINGTON. Society for Sensible Explanations, Western Washington. Tad Cook, Secretary. E-mail: K7RA@arrl.net. PO Box 45792, Seattle, WA 98145-0792 US. http://seattlesketpics.org.

PUERTO RICO. Sociedad De Escépticos de Puerto Rico, Luis R. Ramos, President. 2505 Parque Terra Linda, Trujillo Alto, Puerto Rico 00976. Tel: 787-396-2395; e-mail: Lramos@escepticospr.com; Web site www.escepticor.com.

The organizations listed above have aims similar to those of the Committee for Skeptical Inquiry but are independent and autonomous. Representatives of these organizations cannot speak on behalf of CSI. Please send updates to Barry Karr, P.O. Box 703 Amherst NY 14226-0703.

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